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Creating new connections: Objects, people, and digital data at the Musée du quai Branly

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Abstract: This article presents the new cultural heritage regime of the Musée du quai Branly's collection through an analysis of the digitization of records for objects and documentary data. Non-European collections, notably those at the Musée de l'Homme, have been reconfigured within the new institution. The 'ethnographic' artifact, which was once a scientific object, has become a 'work of art and civilization' a heritage object registered at the Service des Musées de France. Documentary data, which used to be recorded on paper, was entered into a new classification system: the TMS objects database, here conceived as a social space and a space of knowledge shared by different actors. A study of the informational infrastructure shows how connections are created between humans, objects, and digital data. Analysis of this reconfiguration leads to an examination of the materiality of the digital environment. Classifications depend on material storage systems. Manipulating digital data allows for new working methods in creating an inventory, in particular new associations among data offering new possibilities for bringing together isolated objects and collections in unique ways.

Keywords: Cultural heritage practices; Database; Information infrastructure; Cataloguing; Musée du quai Branly.

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In the last twenty years, social sciences engaged in cultural heritage institutions, exhibitions and material culture have seen a renewed interest in museums as field sites (Bouquet 2001)[1]. The introduction of new information technology has contributed to altering museum practices (Keene 1998; Knell 2003; Parry 2007), while museums have incorporated and transformed the digital technologies adopted (Cameron, Kenderdine 2007). In this context, new arrangements between subjects and cultural objects have emerged (Salmond, Lythberg 2012).

Looking behind the scenes at a cultural institution (MacDonald 2002), the Musée du quai Branly in Paris, we examine how the museum transforms connections created between objects, people, and documentary data within a computerized system for managing collections. Following the theoretical line of "material turn" in social sciences (Hicks, Beaudry 2010), these entanglements are the substance for the making of a culture heritage device. This article is the result of an ethnographic case study I conducted at the Musée du quai Branly (Musée du quai Branly) in Paris between 2006 and 2010 for my Doctorate in Ethnology on how the Musée du quai Branly's collections have been reconfigured through the process of digitizing its documents.

At the time, the Musée du quai Branly, which was at the center of the debate on the aesthetization of ethnographic artifacts[2], offered the ideal context for conducting fieldwork. In 2001, approximately one hundred objects from the Musée de l'Homme, all deemed sculptural masterpieces, made their entry into the Pavillon des Sessions (a branch of the Louvre), thus marking an intellectual turn associated with the transfer of the Musée de l'Homme's collections (with the exception of its European collections) to the future Musée du quai Branly. At this moment the ethnographic artifact, once a scientific object, became a "work of art and civilization". The bonds of science forged at the Musée de l'Homme were undone and new elements woven together to form the heritage system of the museum examined in this article.

As we know, the usage and meaning of objects shift according to what are often long and torturous biographies in which objects pass from one spatial, temporal, and social context to the next several times over the course of their history (Bonnot 2002, 2014). In fact, the status of objects in a museum cannot be completely separated from that of the institution where they are displayed, particularly at a time when

1. I am grateful to the blind reviewers of this article for their theoretical suggestions and contributions that helped to extend the historical and ethical debate on the museum's influence on the construction of meaning.
2. See Nora 2007, 2008.

museums represent important elements of the cultural industry (Dias 2003) and the art market, so that their meaning must be continually renegotiated.

The creation of meanings has deep roots, for instance in France with the Louvre, when the public art museum became the sign of a politically virtuous state (Duncan 1995: 22). Past and present connections between people, objects and data are formed through the work of the museum, whose power rests in its ability to de-contextualize an object from its indigenous usages and meanings, and re-contextualize it to serve as a metonym for the museum's ideological narrative[3]. In the case of the non-European objects transferred from the "old" Musée de l'Homme (1938-2001) to the Musée du quai Branly, the history of their collecting was associated with an institutional endeavor to construct a colonial narrative of expansiveness and empire (Conklin 2013). From a scientific point of view, these artifacts were conceived as representing the diversity of culture of their provenances within a vision of the unity of humanity. Yet objects cannot speak for themselves[4]. Subjectivity, ideology, and the curators' and museum workers' choice of exhibit designs will always contribute to creating the specific meaning of an object. The museum constantly puts an object under the pressure of a way of seeing, as explained by Svetlana Alpers (1991). Yet the museum works to show the artifact in a particular way, thus erasing some aspects of the "life history" of the object (Appadurai 1986; Kopitoff 1986) while making others emerge.

Thus I argue that in order to know objects, one must examine the relationships between them and the people who handle them within the framework, for example, of computerized catalogues, as Chris Gosden and Frances Larson (2007) argue in their study of the Pitt Rivers Museum of Oxford. Their analysis made it possible to consider objects in a collection as relational actors in the world of humans. In the same vein and thanks to the work of Fernando Dominguez Rubio and Elizabeth Silva (2013) on the Museum of Metropolitan Art in New York, the trajectories of objects are confronted with a specific "object-position", the physicality of which plays a crucial role in defining relationships.

The transfer of ethnographic artifacts is accompanied by a change in the modes of classifying them. Classification is conceived here as a sort of system of attachment (Hennion 2010, 2013) between objects, data, and people involved in creating and handling new categories of data entry for collections and comprehending the world.

This article thus examines not what museums put on display but how they display it, which challenges their informational and computer infrastructure. A database is

3. This paragraph is inspired by the suggestions of one reviewer.
4. For a critique of "object-based epistemology", see Conn 1998.

conceived here as a social space in which the interests of different actors in a museum converge[5]; in other words, a boundary infrastructure (Bowker, Star 1999; Meyer 2009) and a site of digital configuration (Hine 2006) where knowledge materializes (Jacob 2007).

The digitization practices at the Musée du quai Branly both establish and break connections between different social actors, ultimately creating new meanings for the objects. This is a longstanding practice in the museum world, but one which takes on added complexity in the digital world, where categories move on and new data emerges. Here, museum data are accumulated and reframed according to a new social and heritage order. The database is the framework used to create the inventory leading to the transformation of non-European ethnographic objects into objects of "French heritage", meaning a radical transformation of their legal status as heritage objects – they become indestructible, imprescriptible and inalienable. One might ask then whether the database draws on a neoliberal ideology, particularly in its tendency to extend the principles of privatization and commodification of all aspects of social life[6]. This is open to debate, yet certainly technology and society are not separable. Furthermore, with this inseparability in mind, I aim to demonstrate, in the ethnography of actions carried out on a computer, the materiality of relationships created within the digital world of collections.

When I first consulted objects using the museum database in 2006, the person in charge of digital imagery who was helping me said: "The problem is that there was no initial thesaurus for conducting research"[7]. In fact, finding objects depended on how one looked for them, which in turn determined how one classified them. The very mystery lay precisely in the absence of this classification. Such is the context in which internal difficulties continually arose in the organization of data.

In order to explore this issue, I completed two internships (lasting six months and three months respectively) in the Computerized Inventory and Management of the Collections division led by the Heritage and Collections Department at the Musée du quai Branly. The internships were a way of gaining access to the institutional fieldwork. There I was able to conduct my study by shadowing (Sachs 1993) the administrator of the database on a daily basis, which involved examining his working relationships through the database (work with curators, registrars, restorers, and so on). This allowed me to explore various areas in the museum, administrative offices, storerooms, as well as outside the museum walls, as I shall later explain.

5. See Flichy, Parasie 2013.
6. As suggested by a reviewer.
7. Head of digital imagery, my interview, spring 2006. A thesaurus is a structured vocabulary where words are linked by a relationship of hierarchy or equivalency in relation to the data for the Musée du quai Branly's collection.

Updating: The Arrival of The Museum System Database (TMS)

All the operations performed in the material and documentary transfer and processing of approximately 300,000 objects from the Laboratoire d'ethnologie (ethnology laboratory) at the Musée de l'Homme and the Musée national des Arts d'Afrique et d'Océanie (MNAAO) constitute the "collections project".

When the collections project began, a database was created to manage the collections. The database was run by The Museum System software program (TMS). This software was provided by a Dutch company, the European subsidiary of the American software manufacturer. When used at the local museum of ethnography in Leyden, the program was tested and compared with various other systems for digitizing data by the person in charge of the division of computerized inventory and management. According to the official report on the collections project, "this product was chosen for its capacity to meet the specific needs of the project – particularly when it came to handling flow and emplacement – through reading barcode labels" (Naffah, 2004: 18). The database administrator at the Musée du quai Branly said they chose TMS because of the Structured Query Language format (SQL) used to create it, a standardized pseudo computer language that could be understood by many programs and opened with Access. The architecture of the Access program made it both easier to "create links" using a noncoded reading system, and possible to move a large amount of data in a single operation, a factor that proved to be crucial during the indexing process when the thesaurus "categories" were created. Indexing by concepts and key words made it easier to search the data. The designer could thus list the terms that appeared most frequently (statistical indexing) or select terms in a thesaurus. TMS is more of a generic software program for museums than one designed for a specific museum. The TMS Objects database was conceived as a work tool for different departments in a museum and for the general public that can consult much of the data on the internet.

Choosing the TMS program constituted the first phase in the creation of the objects database. At this point, two alternatives emerged. The database could either be constructed gradually using objects, or defined using written documentation from the two museums that gave the Musée du quai Branly its collection. It was ultimately decided to adopt the second solution, even though it was subsequently necessary to put the documents in order according to the evolution of the museum.

Once the work methods were defined, a service provider was selected to collect the paper documentation in the form of records describing and recording the objects from each museum (the Musée de l'Homme and the Musée national des Arts d'Afrique et d'Océanie). These were subsequently digitized, coded, and organized into computer records. The documentation was then entirely computerized and

presented in SQL format for insertion into the TMS database. In 2001, the database was already active, but it continues to be revised to this day.

The third phase involved the conception and development of what is known in France as *récolement* – the verification and itemizing of objects in the inventory. A team was formed with the aim of analyzing all the objects in both museums and relating them to the computerized documentation (TMS record), to describe the objects and establish the state of their conservation. Once an object was "found" thanks to its inventory number, the following chain of events took place: the object was packed up and transported to the Hôtel Berlier, an industrial warehouse, where it was unpacked, itemized, labeled, cleaned, and restored. It was then photographed (3-D images were recorded for some objects), subjected to an anoxia treatment (to get rid of insects), and temporarily stocked. Once packed up again, the object was transported to a temporary storeroom at the Bibliothèque nationale de France (National Library of France) before being installed in glass cases or storerooms at the Musée du quai Branly in 2006.

The scientific staff at the museum reread the notices (the information on an object contained in the records). They prioritized the four thousand or so objects selected for the museography. The task of correcting and scientifically enriching the database constituted an open project. The database was built upon computerized programs such as the Optical Character Recognition program (OCR) used for the computerized reading of paper records, which my intermediary at the museum told me led to "countless mistakes". OCR is a software program connected to a scanner that makes it possible to read a document "not by turning it into a photograph" but by transforming it into a written document. In documents that were typed over a century ago, "dirty characters" – due, for example, to smudged ink – presented a problem. The software might interpret a number marked as "100" in smudged ink as "188" or "166". Given the gravity of the situation, it was collectively decided that a team of experts composed of two or three people per geographical department would be set up to examine all of the records and locate any eventual "aberrations". The descriptive documentation from the original museums contained historical interpretations dating from the nineteenth century, such as use of the appellation "fetish", for example, which is no longer accepted today. It was therefore necessary to set the database within a more contemporary frame of reference. The application of museum filters in order to transmit terms considered to be worth indexing often entailed rewriting such terms.

The transfer thus calls for updating terms such as appellations, administrative territories (toponyms), and the names of populations (ethnonyms). In the TMS Objects database, there was a system of equivalent terms for the toponym and ethnonym thesauruses for the researchers. The descriptive records of objects and the inventory

records or collection records from the Musée de l'Homme were digitized and linked to the TMS records with the help a multimedia link. These "links" are not available on the internet, since they could disseminate the elements that were later corrected, even if these were historical documents legitimizing an object's place in the museum's collection.

Detaching and Rematerializing the World

In order to analyze the change concerning the ethnographic object and the data it conveys, it is necessary to closely observe the changes in inventory systems between the Musée de l'Homme and the Musée du quai Branly; that is, the passage from paper records kept in cabinets at the Musée de l'Homme to the TMS record at the Musée du quai Branly. This passage has meant that people have become detached from objects, objects have become detached from data, and data has become detached from the person who created it. Nonetheless, contrary to the myth that digitization opened everything up (which is tantamount to believing that all data is linked), the new attachment between data and objects occurs within the creation of new connections between actors at the Musée du quai Branly (Beltrame 2012)[8].

One must first view the inventory system as a system of classification that also depends on a system of material classification (for example, paper records at the Musée de l'Homme) as a technology used to put the world in order. In terms of museum classifications at the beginning of last century, the creation of records for the structured elements of a collected group of items was one step in a process of objectifying a culture seen as "other", or classifying in order to separate and exhibit (de l'Estoile 2007a: 137). During the early twentieth century, handling the paper records – first at the Musée d'Ethnographie du Trocadéro (MET) and later at the Musée de l'Homme – was part of an epistemology of collecting that structured nascent ethnographic activity and ethnology (*ivi*).

The Musée de l'Homme, inspired by the field of natural history, marked a disciplinary unification of ethnography and linguistics on the one hand and physical anthropology on the other (Zerilli 1998). This unitary conception led to what Paul Rivet has called "geographic" specialization (de L'Estoile 2007b: 742). This unification was based on the physical union of work spaces as a "museum-laboratory" (Blanckaert 2015). The additional storerooms of departmental laboratories, where the documentation was kept, were work spaces for scientists who contributed to classify the collections. In accordance with the paradigm inherited from the Muséum national d'histoire naturelle, the field appears as an extension of the museum involved in creating an encyclopedic inventory of the world's cultures

8. On the task of creating thesaurus "categories", see Beltrame 2012a.

(Bourguet 1997). The field materializes at the Musée de l'Homme through a system of documentary classification in cultural areas composed of paper records indexed in files that are classified in wall cabinets. These pieces of furniture – which underlie a technical, cognitive, administrative, and scientific reconfiguration – are a "thinking system" as well as a system of knowledge (Gardey 2008: 171).

This system of material classification relayed a thought system characteristic of ethnographic collections, divided into geographical areas and techniques. The classifications organized cultural events, showing how humans observed in different contexts and periods transformed matter into finished products. Each department managed its collections, and curator-researchers went from the documentary space to the storerooms in a movement of spatial continuity and freedom of action. They dealt with objects and records as needed. With the transfer of the Musée du quai Branly's collections, most researchers did not follow the objects.

The Musée du quai Branly breaks away from the heritage of the Muséum national d'histoire naturelle. While asserting its ambition to be a research center for the social sciences, it proposes a conception of multidisciplinarity that, when the museum opened, associated aesthetics, art history, anthropology, and history. In this new institution, the unification of art and ethnology requires that a division according to geographical areas be maintained, which is also in keeping with the divisions adopted by the art market. The aesthetization of ethnographic artifacts was accompanied by a new system of heritage, put in place notably with the creation of the inventory deposited at the Service des Musées de France en 2013[9].

The classification of objects at the Musée de l'Homme was the fruit of work carried out by researchers who were members of the Laboratoire d'Ethnologie (Centre national de recherche scientifique), some of whom acted as curators. Today, these collections are governed by laws pertaining to French national museums (Delaporte 2006: 74). They are therefore subject to the procedures of the former Direction des Musées de France, now known as the Service des Musées de France (SMF), under the aegis of the Ministère de la Culture. The depositing of the inventory in 2013 marked the inscription of collections from the Musée de l'Homme within the Musée du quai Branly, which became the new depository of the national collections[10]. In fact, this change in legal category from scientific inventory to heritage inventory led to a new "poetics of museum display" (Karp, Lavine 1991) that proposed bringing together objects according to their formal qualities.

At the Musée du quai Branly, the records appearing in response to a request were not organized as a scientific discourse of arborescent relationships with other cat-

9. On the task of creating links between objects and inventory, see Beltrame 2012b.
10. In the case of the Musée National d'Art d'Afrique et d'Océanie, an inventory had already been deposited at the Ministère de la Culture.

egories, as they were at the Musée de l'Homme. No analogy could be made between opening a drawer at the Musée de l'Homme and opening a record at the Musée du quai Branly. At the Musée de l'Homme, looking up "Dogons" brought up all the thematic records of the geographical file concerning the objects linked to this population. The records for Dogon objects were arranged according to criteria based on geographical classification and technique, which were developed by researchers over the course of the last century. Similarly, looking up the term "Dogon" in the database by entering "ethnonym" (thesaurus) could reveal all the records indexed under "Dogon". But this latter request involving recurring terms meant that all the objects that came up were not situated within the prior narrative logic.

The computer infrastructure prescribes modes of accumulating and classifying data that lead to new practices when it comes to handling the TMS Objects record. At the Musée d'Ethnographie du Trocadéro and the Musée de l'Homme, the wall cabinets containing various files organized data in space. The information concerning each object was placed in the space devoted to the department being referenced, where the magnitude of a collection was visible. At the Musée du quai Branly, the TMS computer record for an object allows for the accumulation of information and diverse operations, including registration, inventory, documentation, condition report, and traceability. At the Musée de l'Homme, the drawers contained the records, and they formed a panoptical system for building knowledge around the collections. The TMS Objects record is what actually contained the classifications (headings and thesaurus). In the new system, the TMS Objects record is not simply the sum of all documentary elements found in the various paper records at the Musée de l'Homme, but the digital avatar of the object from the collection with which the curator works.

In the recreation of links between the TMS Objects records at the Musée du quai Branly, constituting groups could involve taking up categories developed by collectors at the Musée d'Ethnographie du Trocadéro and the Musée de l'Homme, but the records (and therefore the objects) could also be connected to other groups developed by curators or those in charge of the database. On the one hand, an object could be indexed within the TMS Objects database in a different category from the one built by the collector, whose name appears on the inventory record; on the other hand, it could also be entered under several categories. The multiple classifications to which each object belongs are not the result of a desire to centralize data that would prevail over the restitution of structured groups by collectors at the Musée de l'Homme. In this context, it is instead a matter of considering the indexation effected by the head of the TMS Objects database as a response to intersecting logic, including: computer logic, for instance searching under "recurring" terms or the possibility of moving a mass of data during a single operation; the logic of conservation and traceability, in the case of creating object categories linked to the organization of

their physical location, itself organized by material (for example, whether or not it is perishable); and scientific logic, in order to meet the needs formulated by curators (for example, when a temporary exhibition is being created).

Waxing Nostalgic: Tracking an Object

New connections have also been created between objects and storage spaces. Céline Rosselin and Marie-Pierre Julien (2005) have proposed tracking objects in order to note how their social and symbolic statuses gradually evolve according to their biographical trajectory. In this section, I will explore, in the vein of Dominguez Rubio and Silva (2013), another level of tracking involving moving objects in the storeroom space. This concerns viewing the object through its barcode, which permits the recording of each movement within the museum (traceability). A new type of attachment is created between the object and space through the barcode. This also amounts to a physical detachment between object and curator, whereby the curator's visual memory becomes confused due to this shift from the "warehouse as laboratory" at the Musée de l'Homme to the new institution's "safe" – like storeroom.

Barcodes originated in the industrial system, and their use in consumer products is well known. The barcode label was adopted to process the roughly 300,000 objects currently held at the Musée du quai Branly. By attaching an object in the collection to a digitized record using a barcode label, a new technical system for managing the collection began to emerge, one where curators are no more than actors handling objects. The project of transferring, processing, and arranging objects is the job of the museum's registrar department (installers, restorers, and so on) and the external service providers it solicits. This undertaking can involve students in anthropology, archaeology, art history, museology and documentation, who all perform different tasks according to a standardized protocol for processing each object, including writing condition reports, cleaning the object, administering the anoxia treatment, taking photographs, packing, transporting, and applying barcode labels.

When the barcode scanner is used, the record keeps track of the object's movements and current location. The movements are recorded as visible lines under the heading "location history". When the place where the object is kept is defined, the curators use the record in which its digital photo appears. Indeed, access to storerooms when projects are undertaken is subject to constraints linked to the organization of the task of arranging the objects on the shelves, set by the teams of service providers and the department managing the storerooms at the Musée du quai Branly. The curator does not work with the barcodes and rarely works with the object's computerized number; instead she uses the TMS Objects record and the inventory number. Registrars and service providers are the ones who refer to the bar-

codes and physically handle the objects. This makes curators nostalgic. Such nostalgia for the object is also a nostalgia for how storerooms used to be organized.

The storerooms project was equipped with a plan for preventing the risk of flooding: "Plan de Prévention du Risque d'Inondation", or "PPRI". Curators place objects in PPRI 1, PPR 2 and PPRI 3 categories, in order of priority for evacuating objects in the event of an emergency and at a rate established by the project manager for each PPRI category. The Oceania storerooms were among the first to be completed, and the curators were given the opportunity to go down and see them: "It's still a bit abstract for us because we do not yet have a habit of coming down here on a regular basis, walking around, and making the place ours. It's still very foreign to us" (Mélanie, my interview, march 2008). In fact, the way the storerooms are organized makes the objects both visible and invisible. The priority objects, which are placed in the first rows at the front of the storeroom, are easily located. However, their packaging, which is necessary in case they need to be removed in an emergency, is such that they must be kept in boxes, thus making them invisible. Compactus shelving also contributes to making them invisible: "What's difficult for us is precisely that the PPRI organization is geographically and stylistically disorienting, meaning that everything is mixed up" (Mélanie, my interview, march 2008). For Mélanie, styling makes it possible to determine the geographical location of an object.

> Seeing how motifs are put together, the types of materials employed for an object, and combining them with the motifs covering this object in formal lines lets me determine whether the object comes from Melanesia, New Guinea, or the Middle Sepik and that, if that's how it has evolved, then it's probably an Iatmul object! That's it! The task involves a combination of reading different elements, how they're fashioned, what materials are used, what motifs are present on the object, all of which collide with your visual memory! It involves things you have already seen (Mélanie, my interview, march 2008).

Storerooms organized according to how things are divided and packaged according to PPRI contribute to the loss of the stylistic markers specific to a given context.

Although Mélanie confirmed that she is able to move about in the storerooms, she said: "You can't, however, move the objects! We're not the ones taking care of traceability and all that, so you look but can't touch, meaning that you don't move the objects because it creates a headache!" (Mélanie, my interview, march 2008). The relationship between "object" and "shelf" is recorded at the computer level. If someone changes an object's physical location without noting its new address, it also messes up the memory of the object's digital avatar. Even though the object can no longer be manipulated *informally*, it needs to be put back in the same place. In the hazy space and time of this initial arrangement of objects, Melanie – who remained

hopeful about visually reappropriating where objects are placed in the storerooms – said she took advantage of invitations from the storerooms management department to familiarize herself with how the rooms and objects are organized.

The art of memory, especially visual memory, is undone here (Yates 1966). Visibility is no longer essential when it comes to memorization, since computerized traceability departs from the curators' system of visual memory. Along with memory, the task of visually linking a series of objects in space also disappears. Thus curators' working methods change along with the previous relationships between objects in the storeroom space. Other methods emerge as the curator who enters the storeroom creates a new mental map, notices new classifications in space (such as the PPRI), knowing that the objects prioritized in the event of evacuation are found at the front of the storeroom. Ways at the back are the last objects to be removed. Nonetheless, whether work involves the object or its digital avatar, each modification or addition must be documented and justified. An object's physical position in the storeroom, as well as the position of data in the TMS database, is determined within a system today that curbs the curator's autonomy of action.

Back to the Future: Resolutions

New links are also established with the past. During the transfer of the collection and verification of the inventory (*récolement*), the paper records were digitized. Certain records, however, were not found. These "orphaned" objects without records were recorded as "X" by the Musée du quai Branly and were inventoried using a sequential computerized number (for example, "X378783")[11]. When the museum opened in 2006, it included some 20,000 objects recorded as "X". Next to these objects, the database harbored 27,000 digital records that had not been verified in the inventory (or *récolé*). A record that is *non récolé* is one that has not been associated with any object but which has nonetheless been digitized within the TMS database. It circulates in the database just like an object would. According to Denise, head of the TMS database, some objects may correspond to records that are *non récolé*. An "X project" has been created to resolve this issue and is coordinated by Flore, a member of the Computerized Inventory and Management of the Collections division at the Musée du quai Branly.

Once the traces provided by previous inventories at the Musée de l'Homme are digitized, the history of objects that have lost their connection to a collection during the transfer to the Musée du quai Branly must be *found*. Those objects with no apparent connection are recorded as "X" by the new institution. These "X" objects

11. Object X378783 corresponds to a pair of leather bracelets in the Africa heritage unit.

must be reassociated with a collection for them to be entered into the museum inventory using a standardized number.

The inventory was created using the digital objects, by the museum's new actors as well as the service providers. Indeed, the technological change occurred within a social context already in movement: new professional tasks arose, characteristic of those who work on computers to trace objects recorded as "X". Thus the role of "Xologist" (*Xologue*), a name coined by the institution, emerged.

Within this project, the possibilities of placing requests and of handling and harmonizing data produce different methods of creating a connection between object and collection[12]. Standardization can create new inventory numbers or recreate the match of an object recorded as "X" with an available inventory number in the TMS and Docmuse databases. Docmuse is the database used by the Documentation and Archives service at the Musée du quai Branly, run by the Media Library department. These databases are treated as excavation sites. As Michel Foucault observed (1969), methods of order form the bases of knowledge and the archaeological foundations of its possibility. By defining the archive as 'the system of its functioning' Foucault asserted that the system, far from serving a total history, is what allows one to distinguish between discourses in their many existences.

With the permission of the museum's project manager, I was able to observe the task of researching the objects recorded as "X" carried out by an agency providing the service[13]. In offices located on the ground floor of a building in Paris, usually three people work on a computer to reestablish connections between objects and collections. As noted earlier, the Musée du quai Branly calls them "Xologists". They are the "little hands of the informational infrastructure"[14] that on a daily basis generate the museum's heritage inventory. Before the protocol for researching objects recorded as "X" was put in place, the head of the database set up meetings with curators to introduce them to the Xologists, some of whom they knew already.

The Xologists are constantly in contact with the museum's project manager Flore, who was recently transferred to the communications department. Through her, and

12. There are three resolutions for objects recorded as "X". The first is the verification (*récolement*) of a record and the object to which it belongs, or the matching of an object and a number from the old inventories from the Musée de l'Homme or the Musée National d'Art d'Afrique et d'Océanie, which leads to the standardization of the object number. "Collection tracking" is used when the collection an object belongs to is located, but the object's original numbering in the collection cannot be found. "Retrospective inventory" occurs when the standardization of the object's inventory number takes place by assigning an Musée du quai Branly number created from scratch.

13. The external service providers, who have university degrees in art history, documentation, and anthropology, provide services that replace the previous practices of curators at the Musée de l'Homme.

14. This refers to the title of the dossier by Denis, Pontille 2012.

via the interface used to research objects recorded as "X", the Xologists also communicate with curators. If necessary, they make plans to meet in the museum storerooms in order to peruse the objects laid out on tables by registrars keeping track of their traceability.

The interface was created by Oscar, the administrator of the database, who duplicated the data according to a different method of organization. Some headings feature the standard record of an object (appellation, description, measurements and so on), while others are specific to the "X project". The lower part of the record presents new fields, notably concerning the Xologist's research, including the Xologist's identifying trigram, the level of certainty concerning the match between an object and an inventory number, the return to an object, validation, and so on. The information regarding *resolution* is filed by the Xologist under the tab marked "Notes" according to the standard display for the resolved object recorded as "X". The record of the "X search" is then erased. The standardization of the inventory number systematically leads to the disappearance of the record for the object recorded as "X".

Over the course of a few days, I followed the work of a few Xologists[15], including that of Pierre and Françoise. Pierre studied Amerindian anthropology and was in charge of resolving objects recorded as "X" for the Americas. He has worked as a service provider for the museum since the collections project began and is now on his third project. He seemed overwhelmed by a heap of folders of various colors piled up next to the computer on his desk. They were the current research folders for the objects recorded as "X".

Pierre began by apologizing for the "disorder" caused by his folders. It became clear that this accumulation was the driving force behind his analysis. He creates folders for each object recorded as "X", which he classifies by country – which means that in most cases he is referring to the collections. Indeed, a sort of equivalence between collector (and therefore the assigned collection) and geographical area was established during ethnographic missions in the twentieth century. The collections of the Musée d'Ethnographie du Trocadéro referenced a collector's mission on different territories, and were recorded, object by object, in the common inventory register. At the Musée de l'Homme, the collections were primarily managed by geographical departments, each of which produced its own inventory. Pierre must contextualize the objects within the collections identified with the collectors.

In order to describe his work, I will introduce a specific case involving an object recorded as "X": a group of fragments, one of which was temporarily recorded by the institution as "Z". The TMS database holds the objects and elements recorded as

15. For a deeper understanding of the different tasks of Xologists, see Beltrame 2014.

"Z". "Z" is a category that identifies all non-heritage objects. Objects recorded as "Z" are not registered in the inventory deposited at the Service des Musées de France; these include architectural decorative elements in the Musée du quai Branly's building on the Rue de l'Université (for example, the column painted by an Australian artist in the museum's library, or the ceilings of the building's four floors). Legally, these elements are not part of the museum's collection. All objects recorded in the database, whether protected by heritage laws or not, coexist in the same flux of data but are named differently and have different destinies: the former have to be transferred over time to future generations, the latter (the "Z") can be changed or disappear, depending on the wishes of the museum.

Flore, the museum manager for the "X project", shared the following concerns about the presence of fragments and inventoried elements at the Musée du quai Branly recorded as "X":

> Among the objects recorded as "X", there are many like that, bits of wood, bits of thread that were recovered near objects and about which [people] were unsure if they belonged to the objects or if they were just bits of wood placed on the shelf; they therefore kept everything and recorded it as "X", saying, "You never know". Then they put everything in the "fragments group" or the "elements group". So either we manage to find the object to which the fragment or element belongs[16], and, best case scenario, we put it right back with the object, we tie a "knot", we associate it, and never discuss it again; or we record this object as "Z", and it is identified, and we notify the restorer that it needs to be restored as necessary to go with the object of which it is a part. Through TMS, they are linked (an entry text associates them), referred to each other. Normally, TMS links a fragment to its source object, as we say – the object from which it originates (Flore, my interview, may 2010).

The link between a fragment recorded as "X" or "Z" and the "source object" is digital. During the physical reassociation, "X" and "Z" disappear.

The case presented by Pierre belongs to this category of fragments initially reassembled in a group:

> That one was complicated because it's a group of small pieces… X391237 and the fragments that had been put together did not necessarily belong to the same collection… now the group no longer exists, and the fragments have been separated.

Pierre, who knows the Brazil collections well, searched for these fragments among the Brazilian unbaked clay figurines. He also referred to a note on the verification (*récolement*) of a small group that was written when the collections were transferred. He was thus able to resolve some of the objects recorded as "X". "Among nine objects recorded under a single "X", three have been separated into three "X"s,

16. It should be mentioned that, according to the institution's vocabulary, a "fragment" is a piece that has accidentally detached from an object, and an "element" is one part of a composite object.

and there has also been a return to the object". Among these three objects, two were then attributed: one was reassociated with its object (pot and small plug), and the other, the fragment of a seat back, was recorded as "Z" while waiting to be reattached to its physical object. There remains one ceramic fragment to identify.

> The only one that was not found is X436277… I thought it could correspond with… but no... one should not trust the chromatic variation of photos too much. For me, it's perhaps a zoomorphic bowl in the shape of a tortoise, you see… First I thought it was more simple because it referred to animal forms, but there are a lot of those, in fact. The return to the object for verification would presuppose taking out a number of objects to compare them to the pieces… So the decision was taken to place them in "retrospective inventory" because it was too time-consuming for a single case; a reasoned decision was made, knowing that someone will perhaps stumble upon this again later (Pierre, my interview, december 2010).

In carrying out the investigation, Pierre usually begins by researching the collector's name and then his or her collections by comparing them with other requests by material or appellation. He knows the names of the most important collectors.

> It just so happens that they are usually ethnologists, so I know a lot of people who have worked on Amazonia… When I am [working] on the Jules Crevaux collections, for example, I know that it will correspond to the north and west of Amazonia; it will be Guyana, Colombia, Brazil, and then Bolivia… When I am working on a collection and I see a name, I know the geographical provenance of these collections… It also helps me to remember them… That's why I manage to remember a certain number of collectors, because I already knew them; otherwise, there are so many that it's difficult… For Mesoamerica, I know a lot less; I only know the major collectors (Pierre, my interview, december 2010).

The handling of digital material makes it possible to access countless data no one can possibly remember. Through his work with digital and paper folders, Pierre can develop analyses providing new clues.

The practices adopted by Pierre – and the Xologists in general – fragment the data accumulated and stocked in the databases in which they circulate in a disaggregated way in order to be recomposed. Pierre handles his documentary corpus by geographical area, while other Xologists adopt a method using types of objects.

When I met Françoise, she presented the case of object X368933, a spear with an old number written in the "substitute number"[17] section of the TMS Objects record: "It's a spear that has a substitute number from the Musée de l'Homme, so the first step was to conduct a search using the number "*50.76.6*". In the database, the "*" (asterisk) enables one to find all of the inventory numbers containing the numer-

17. Former Musée d'Ethnographie du Trocadéro or Musée de l'Homme number marked on the object and noted in the TMS Objects record.

ical sequence "50.76.6". "And nothing came up!" she exclaimed. She also tried breaking the number down into "*50.76*" and "*76.6*", but this case did not yield "any relevant result" either.

At this stage, she assumed there had been an error in transcribing the substitute number.

> In this case we conduct a search using question marks in the numbers… I made a few attempts, and, for the "*50xx6*", in the end I got 404 results. Then I chose for them to be displayed as a list in order to be able to identify them. The first thing I did was to classify them by Heritage Unit in order to find "Africa *non récolé*", and then I went straight to see if, among the Musée de l'Homme records that are *non récolé*, there wouldn't eventually be any… And right there… I found a record that was *non récolé*, and it was the "71.1950.75"… The transcription error most likely occurred during the collections project… you might see the number written on the object and confuse the numbers, you know… In this case, "76" was written instead of "75" for the collection number. I checked the description – plus I had a beautiful sketch [of the object] – and the measurements matched… It's level 1 on the scale of certainty of the record for "search for objects recorded as 'x'" (Françoise, my interview, december 2010).

She is currently dealing with a group of objects recorded as "X" that have no references to any previous inventory, and her searches often end up with the option validated by the curators of retrospective inventory. According to Urry (1995), the construction of the past is always mediated by a person's ways of understanding the world. These are cultural and historical ways, argues Urry, and sociotechnical forms, as suggested here, of creating new connections in the world. The absence or weakness of clues generally leads curators to opt for recording an object from scratch (such as the retrospective inventory). Thus the history of the object is recorded from its institutional present (digital or otherwise), creating new traces instead of just *finding* them.

The New Texture of the Past

The inventory, as well as the marking, can be unreliable (Kavanagh 1999). Within the framework of the current project, Xologists and curators are led to constantly negotiate an object's possible history. The possibility of coming back to it at another moment by other researchers allows them to overcome the fear of assignation. The TMS database, which can be continually modified, perpetually indexes an object's characteristics. The sorting of associations between objects and collections takes place within the database. That which can be patrimonialized is the result of a massive transfer of heterogeneous objects placed on the shelves of the former storeroom. Even if their nature is not always obvious, they have all been recorded in the TMS database. The moving of objects made possible by managing the TMS data-

base accompanies an attempt to be exhaustive. When it is difficult to make a clear-cut decision about where an object in a collection belongs due to a lack of supporting documentary elements, retrospective inventory makes it possible to resolve the issue. It is a documentary tool for handling doubt concerning an object's reliability within a context where all registered objects can be patrimonialized a priori. Reliability is thus generated by the social and technical system rooted in a specific context at a given moment. Even when the object is physically absent, the records that are *non récolé* can themselves be patrimonialized, since they live in the same environment as the objects' digital avatars.

Digital archiving modifies the research trajectories and the regime surrounding the presence of a document and an object by lending the past a new texture, one that is always malleable but in a different way. As Geoffrey C. Bowker asserts:

> Our past has always been malleable, but now it is malleable with a new viscosity. The new texture of our past is that we can go from the global to the local and back again with great speed. […]. It is not that we have the ability to aggregate brute numbers – that have been available since the early nineteenth century at least in a number of domains. It is rather that we can aggregate the data along multiple different dimensions and perform complex operations over that set of dimensions. It is the pleats and the folds of our data rather than their number that constitute their texture (Bowker 2005: 7).

The digitalization of previous inventories makes it possible for new forms of experience between people, objects, and their histories to emerge. On the one hand, the Xologist works with a digital avatar that brings together a bundle of possible indexations in an environment with specific characteristics. When matching a collection, the Xologist manipulates data by its folds (Deleuze 1988)[18], which are treated here as the data's relational capacity to be arranged in different groups and on multiple levels. Recording and the logics of renumbering are currently generated by a network of people and objects that has been reconfigured within the new institution, where new "coherencies" are produced.

> That's why we wait for the end of the project to do it, in order to maintain a certain coherency if other objects are found in the process, to keep all the spoons together, that sort of thing… But the person in charge of the database does not quite know yet how she's going to organize herself. A priori, that's the direction she should give in order to make sure that the objects don't get dispersed again, when we've managed to find some sort of guiding thread (Flore, my interview, may 2010).

18. With the concept of the fold, Gilles Deleuze (1988) described arrangements as "agencements". In accordance with the twisting of this infinitely movable line, the fold constitutes distinct domains by connecting them.

Here, object categories appear as real data-entry systems embodied by the observed collections, and as modes of organizing and configuring the French heritage. Xologists use the physical traces of inventories as a means of rebuilding the pasts of objects in the Musée du quai Branly's collection through the mediation of the TMS database. Practices for creating the heritage inventory in the new institution are rooted in a concrete process, at once in the space, the materials, and the movements of Xologists. Recording and classifying the analyses of objects recorded as "X" in the TMS database pave the way for building heritage. While every heritage system is explicitly devoted to conservation, the acts of classifying never cease to transform it, and make themselves the subject of new archival and conservational practices. Such practices demonstrate that museums, which seem devoted to objects and the past, are also concerned with the organization of the present and the social relationships this entails. Inventory involves the collective efforts of those in charge of the collections and service providers, which are mediated by the administrators of the TMS database. Everyone works together toward the *resolution* of objects recorded as "X" in the database, a digital space that connects them – sometimes even before they have had the chance to meet in the basement of the museum.

Conclusion

If we assume that the work of the museum has always included the re-ordering of the world, the digitization of collections then follows a longstanding museological practice of de- and re-contextualizing objects. Yet it complexifies it in new ways. While object categories at the Musée de l'Homme are undone, at the Musée du quai Branly new intersections of sets of items are formed by a network of logics: informational, curatorial, scientific and of heritage. The digital avatar of the object is more than the sum of its documenting operations. It becomes the object with which curators and other museum professionals work. It also contains its own categories. The new data organization is accompanied by the reconfiguration of storeroom spaces allowed for by the barcode, thus undoing the act of visual memorization by the curator or researcher. The digital avatar records its own position, and the digital memory must be preserved to find the object in the space, entering data and taking care not to mess up the relationship between the object and its physical position.

In this sequence of breaking old connections and creating new ones, a political shift from science to art occurs, with the creation and deposit of the new collection inventory protected by laws of heritage. The act of putting the heritage objects in order is accompanied by a reconfiguration of social order. While the Xologist and other service providers, for instance, create a connection between object and collection and establish a new patrimonial order, the "social" order between database users is stabilized, including the distance between the object and the curator and the emer-

gence of other institutional roles (or service providers) in the processing of an object. Observing such process, one can see how the history of an object is created, not rediscovered, by a new sociotechnical system. This is not about the authority of the past resurfacing, but about the inscription of its traces within the institutional present.

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