

Seeing spots: Identification of a codex cover

LEIDEN (Ludo Snijders). This note discusses the identification of the material making up the cover of the Codex Laud (MS. Laud Misc. 678, also known as the Codex Mictlan; for a commentary on the contents see Anders and Jansen 1994). This codex is one of two remaining Mesoamerican codices that has a cover. Alphabetic text was written on the cover when the book came into the possession of the archbishop of Canterbury, William Laud (in 1634), and later when it was incorporated into the collection of the Bodleian Library. However, it has a feature that makes clear that the material of the cover itself is not European. As is described by Burland (1966), the support of the codex is made of a type of leather (identified on the basis of the size of individual pieces as deer) covered by a layer of gesso (of still unclear chemical composition). On the front and the back an extra piece of skin was glued. These pieces are thinner, harder and slightly larger than the main part of the codex, overlapping the folios about 1 mm on all sides (Burland 1966: 9). Although currently only one small patch is left, according to earlier descriptions (Burland 1966: 9–10; Paso y Troncoso 1961: 31–32), the front cover once contained multiple small patches of fur. Apart from the small surviving patch of dark fur, the overall colour of the covers now seems to the naked eye a uniform beige.

The original codex was available for viewing and photographing during a visit in October 2013 as part of the NWO Science4Arts project “Shedding Light” (a cooperation of Universities of Leiden and Delft). The unusual nature of the



Fig. 1. Comparison of the edited image of the Codex Laud (or Codex Mictlan) with the head of an average-sized jaguar.

cover warranted closer investigation of the digital images. A pattern on the skin became visible when a photograph of the cover was converted into a black-and-white image and the red and yellow channels were removed using Photoshop. The image clearly showed that this cover has black spots (Fig. 1). This is highly suggestive, as it confirms what has been assumed based on iconographic representations of books. Especially in Classic Maya representations, the codices are covered with a spotted material on both sides, which is interpreted as jaguar skin (Coe and Kerr 1997:170–171).

In order to better understand what animal had been used, detailed photos of the front and back cover were compared with modern skins in the natural history museum Naturalis in Leiden. As these skins retained their fur, it was only possible to make a comparison based on the size, frequency and distribution of the spots. The earlier assumption that these

covers are made of deerskin (Paso y Troncoso 1961:31) can be disregarded. Though young deer may have spots of the appropriate size and distribution, their spots are white. Only three species of spotted animals live in Mesoamerica that have black spots on a light background: the ocelot (*Leopardis pardalis*), the margay (*Leopardus wiedii*) and the jaguar (*Panthera onca*). Both the margay and the ocelot have spots that form large, linear shapes, very different from the pattern found on the cover. The jaguar's spots form large rings, except for the area on the top of the head, where the individual spots are evenly distributed. If the image of the spots on the cover of the Codex Laud are compared at the same scale with the head of a jaguar of average size (body length of 1,2m), it is clear that the spots are also of similar size (Fig. 1). Considering the fact that this particular jaguar was not very large and that furs can be stretched significantly, the area on the top of the jaguar's head would be large enough to create the cover of the small Codex Laud. On the back cover spots of similar size can be seen as well, though with more difficulty. They form two large rings as is the more general pattern found on the jaguar's back and sides.

One of the older jaguar skins in the Naturalis museum was in a relatively poor state of conservation. Because of this, one small piece (~ 3x6 cm) had detached from the main skin. This piece was graciously released for the investigation of the skin itself. Though the piece came from the relatively light and long-haired underside of the animal, some valuable information could be gained. The sample was shaved using electric clippers and a razor blade in order to study the surface of the skin. This had to be done very carefully as the skin had acidified, due to early conservation treatment of the pelt. This meant that the skin had become very brittle and the epidermis was at risk of detaching from the underlying corium. Once shaved, it was studied under a stereoscopic microscope (Nikon SMZ800) in the magnification range 10x-63x. The downside of using a 60-year-old, acidified skin became immediately apparent, as it was impossible to remove the hairs completely without damaging the skin and thus destroying the follicle pattern. What could be observed, however, was that the hairs grow in clear clusters. Furthermore, the dark hairs come from hair follicles that are themselves darker than the surrounding skin. As a result, the dark spots of the jaguar's fur are seen on the level of the skin as clusters of darkened hair follicles. This is the same pattern that can be discerned on the cover of the codex. Definitive identification through such follicle pattern analysis is problematic, however, due to variation within the species and individual skins. As such, decisive identification of this fur may only come with DNA analysis.

Given the high quality of the codex, it is only fitting that it was given a special cover. The symbolic significance of the jaguar in the Americas has been well established (cf. Saunders 1998). Using the skin of the head may have made this cover even more symbolically significant, though there are two practical considerations as well. First of all, as the book is so small, selecting an area of the jaguar skin with small and more-or-less equally distributed spots may have been more aesthetically pleasing. Secondly, the skin on the head of the animal is, because of its size, not the most useful area and it may thus be a practical consideration to use a piece

of fur that fitted nicely as a cover but could not be used for anything else.

Why these furs lost their hairs can be explained by a number of factors. The first one is mechanical friction caused by sliding the manuscript in and out of the box it has been kept in. The leatherwork that covers this wooden box does not seem English in style, suggesting that the book was put in this box before it arrived in England. This box is however slightly too big, suggesting that the book used to be thicker. This could be explained if the covers were still covered in hair when it arrived in Europe, presumably at some point in the 16th century. However the second factor, the insect damage that was noted by Burland (1961: 10), shows that by 1634 most of the hairs must have been gone, as the alphabetic text and date is written over the damaged areas. Next to mechanical friction and insect damage a third factor that may have contributed to the loss of hairs is desiccation. The drying out of furs can cause the follicles to open and the hairs to fall out (Kite 2006: 167).

Although it has lost virtually all its hairs, the evidence thus far suggests that the Codex Laud (or Codex Mictlan) was once covered with jaguar fur. Not only was it masterfully executed on the inside, the outside must have been impressive as well.

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References

- Anders, Ferdinand, and Maarten E.R.G.N. Jansen
1994 *Pintura de la Muerte y de los Destinos. Libro explicativo del llamado Códice Laud*. Fondo de Cultura Económica, México.
- Burland, Cottie A.
1966 *Codex Laud*. Akademische Druck und Verlagsanstalt, Graz.
- Coe, Michael D., and Justin Kerr
1997 *The Art of the Maya Scribe*. Harry N. Abrams, New York.
- Jansen, Maarten E.R.G.N., and Aurora Pérez Jiménez
2011 *The Mixtec Pictorial Manuscripts: Time, Agency and Memory in Ancient Mexico*. Brill, Leiden.
- Kite, Marion
2006 Furs and Furriery: History, Techniques and Conservation. In: Marion Kite and Roy Thomson (eds.), *Conservation of Leather and Related Materials*, pp. 141-169. Routledge, New York.
- Paso y Troncoso, Francisco del
1961 Notas incidentales sobre el códice Laud. In: Carlos Martínez Marín (ed.), *Códice Laud*, pp.31-32. Instituto Nacional de Antropología e Historia, México, D.F.
- Saunders, Nicholas, J.
1998 *Icons of Power: Feline Symbolism in the Americas*. Routledge, New York.