

Pits, Pots and Pigeons: A New Anthropological Archaeology Project about Tanners in Marrakech

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Abstract: Marrakech, embedded in the Haouz Plain north of the High Atlas, was founded by the Almoravids in the XIth century. With the city's flourishing political, cultural and economic development from the XIth/XIIth century onwards, a neighbourhood of tanneries was established in the eastern part of the medina, still existing today. The artisanal transformation of raw animal skins into high-quality leather and its processing into various products has thus represented an important cultural heritage for almost a millennium. A new research project 'dbagh' sheds light on this complex topic from an anthropological and archaeological perspective. The focus is on precise documentation of the 'traditional' tanners' quarter in order to document the tacit knowledge handed down over generations, as well as the material culture and structures. In addition, a little-known area of small tanneries to the north of the medina will be analysed.

Keywords: Marrakech, Medina, Tanneries, Leather Industry, (Historical) Archaeology, Anthropology, Cultural Heritage.

“Des deux quartiers de tanneurs existant à Marrakech, celui de bab debbagh et celui de riad la¹-arus le premier est incontestablement le plus ancien et le plus important.”¹

Marrakech, “l’Oasis perdue”

Founded by the Almoravids in the XIth century, Marrakech (465 m a.s.l.) is situated on the vast Haouz plain to the north of the High Atlas and is bordered by three rivers. With the political, religious, cultural and economic development of the urban metropolis, extensive areas for trade and commerce, especially for craftsmen and workshops, were developed in the immediate vicinity of exceptional monumental buildings. The area around the Ben Youssef Mosque, located in the northern part of the medina, is a prime example of this type of urban development. As part of the original city, its long history shows a progressive structural densification of the surrounding area and continues to play a central role for various craft activities and associated markets. Marrakech is the hub of important trade routes, thus starting in the XIIth and XIIIth centuries, a complex water supply system was constructed and further developed through the ages. A dense network of

¹ Danièle Jemma, *Les Tanneurs de Marrakech*, Mémoires du Centre de recherches anthropologiques, préhistoriques et ethnographiques XIX, (Alger: Centre de recherches anthropologiques, préhistoriques et ethnographiques, 1971), 14.

channels, parts of which still exist today, transported water from the Atlas Mountains to the desert-like plain of Haouz,² irrigating extensive palm groves, gardens and agricultural areas and supplying the city's inhabitants, buildings and businesses. Only during the last few years has it been possible to precisely document the history and function of this early technological masterpiece of the city's economic and technological backbone.³ Until recently archaeological and historical research in Marrakech was limited mainly to the study of important monumental buildings.

The Manufacture of Leather

In addition to agriculture and trade in desirable goods, craftsmanship was a major economic factor in Marrakech in the Middle Ages and modern times.⁴ The manufacture of leather and its products played a crucial role (Fig. 1). Livestock breeding is still of great economic importance in Morocco today, the transformation of raw animal skins into high-quality leather has a long tradition dating back thousands of years. In addition, there are numerous local plants and plant substances suitable or necessary as natural tanning agents and colourants for the tanning process. Animal skins are still an important raw material for the manufacture of clothing, shoes, bags, bookbinding and other objects.⁵ Finally, leather – along with pottery and sugar – was an important trade and export product for many centuries and thus the material basis for economic, cultural and political interdependencies.

In Marrakech, the neighbourhood for tanneries was established to the east of the medina – apparently as early as the founding of the city – and still exists today (Fig. 2). Access to this district is through the *bāb ddbāgh* (Tanner's Gate), which dates to the city's beginnings. It is the most complex gate in terms of its development and defensive function and the only one in Marrakech named after a craft trade.⁶ The location of the tanneries on the eastern, downwind side of the medina is due to the odour, sewage and waste emitted by the tanners' work as well as the proximity to the necessary water supply from the nearby *wād isīl* and the artificial water supply. Directly north of the tanneries, the (fire-hazardous) neighbourhood (*tabḥīrt*) of potters and their kilns producing ceramics and bricks (building material!) existed until

² Cornel Braun, *Teheran, Marrakesch und Madrid. Ihre Wasserversorgung mit Hilfe von Qanaten. Eine stadtheographische Konvergenz auf kulturhistorischer Grundlage*, Bonner Geographische Abhandlungen 52 (Bonn: Ferd. Dümmlers Verlag, 1974). Mohamed El Faïz, *Marrakech. Patrimoine en péril* (Arles, Casablanca: Actes Sud; EDDIF, 2002).

³ Soad Belkeziz, *Le Miracle de l'eau. Marrakech, cité-jardin idéale* (Marrakech: ID Territoires, 2021).

⁴ "L'industrie du cuir a valu à Marrakech une célébrité mondiale." Gaston Deverdun, *Marrakech des origines à 1912*, vol. I. Texte (Rabat: Éditions Techniques Nord-Africaines, 1959), 135; Marie-Rose Rabaté, *Maroc, les artisans du cuir* (Paris: Magellan & Cie, 2012).

⁵ Marceau Gast, "Cuirs et peaux," *Encyclopédie Berbère* 14 (1994): 2144-53.

⁶ Charles Allain and Gaston Deverdun, "Les portes anciennes de Marrakech," *Hespéris* XLIV, 1^{er}-2^{ème} trimestres (1957): 85-126.

the mid 20th century and had important relationships with the tanners. The artisanal production of leather and the constant transmission of this knowledge in one place over the course of almost a millennium represents an extraordinary situation and an important cultural heritage⁷ – and an enormous potential for scientific research.



Fig. 1: Marrakech, leather workshop, 1925 (Photo: ETH-Bibliothek Zürich, Bildarchiv).

“La peau est douée de vie”

The ethnologist Danièle (Maryem) Jemma-Gouzon (maiden name: Jemma) dedicated her career to studying the tanners of Marrakech in a pioneering monographic in the 1960s (1969 and published in 1971).⁸ In addition to analysing and documenting the technical processes, her work focused primarily on the symbolic conceptualisation of tanning. The entire process, which takes place in a spiritual atmosphere,⁹ is to be understood as the revitalisation (“resurrection”) of a dead animal’s skin, to which the tanners give a second life, using appropriate terminology: the skin “eats, drinks,

⁷ Nour Eddine Nachouane and Aicha Knidiri, “Cultural Heritage Enhancement for Tourism: The Case of the Tanneries at the Medina of Marrakesh,” *Turismo y Patrimonio* 13 (2019): 115-26.

⁸ See Jemma, *Les Tanneurs*; Danièle Jemma, “Éléments d’approche de l’organisation sociale et rituelle d’une cité traditionnelle (Les Tanneurs de Marrakech.)” (Thèse de Doctorat de 3^{ème} cycle en Ethnologie, Faculté de lettres et sciences humaines Montpellier, Juin 1969).

⁹ “Toute l’organisation de Marrakech semble s’articuler autour de chiffre mystique,” Jemma, “Éléments” 18.

breathes, sleeps, is born from the water...” This metaphorical perception of tanning is linked to the close relationship of the tanners to the (under)world of the dead and the interweaving with the everyday social and religious life of the “City of the Seven Saints.” Jemma-Gouzon mentions another “ancien quartier de tanneurs et lotissement créé autour du tombeau de Sidi Bou Amr, riche bienfaiteur d’origine andalouse”¹⁰ in *Riyāḍ La ‘rūs*. It is an area in the northern centre of the medina, close to today’s leather market and the aforementioned Ben Youssef mosque.¹¹ An archaeological investigation of this second urban tannery area has not yet been carried out. Today, only a few traces remain, and most of the old workshops have been replaced by new buildings. The dating and chronological framework are therefore largely unknown.



Fig. 2: Marrakech, aerial view of the tannery district, in the background the potteries and brickworks; city wall with *bāb dbbāgh*, *kheṭṭaras*, water channels and *wād isīl* with the old cemetery, 1930 (Photo: ETH-Bibliothek Zürich, Bildarchiv).

Against this background, the new international research project “*dbāgh*” was initiated, which approaches the topic of the tanners of Marrakech from the perspective of archaeology and anthropology. The focus is on the precise documentation of the “traditional” tanners’ quarter in the eastern part of the medina in order to record the tanners’ craft that has been handed down over generations but which has now changed considerably, as

¹⁰ Jemma, *Les Tanneurs*, 17.

¹¹ It is interesting to note that a tanner’s knife (undated) known as the *sedriya* was apparently found in the Medersa Ben Youssef (Inv. MBY-19-223).

well as the material culture and structures of leather production.¹² In addition, the lesser-known area in *Riyāḍ La 'rūs* will be investigated. Both parts of the project are to be understood as complementary, at the interface between the historical past and the anthropocene present, between the values of intangible and tangible cultural heritage.¹³ This first report presents preliminary results of this research in 2023/2024.

Old Tanneries in *Riyāḍ La 'rūs*

Jemma-Gouzon described a second area of historic tanneries (sing. *dār dbāgh*) in Marrakech, which today lies in the middle of the inhabited and built-up north-eastern centre of the medina: *Riyāḍ La 'rūs*. “Aujourd’hui cependant seul un *derb* subsiste de cet ensemble: le *derb debbagha*, impasse des tanneurs, qui ne compte que cinq tanneries.”¹⁴ This dead end passage – today “*Derb Dār Dbāgh Lakbīra*” – is a reminder of the former function of this neighbourhood, in which only goat and sheep hides were processed into leather.¹⁵ Jemma-Gouzon continues: “Sur les cinq tanneries subsistant encore dans ce quartier, les deux plus importants sont: dar debbag shorfa et dar debbag nhal (le palmier)... Un ou deux d’entre eux possèdent encore un iferd vivant.”¹⁶ The ethnologist emphasises several times that the importance of the tanneries and the associated processing of leather in this area plays a much smaller role than in the eastern part of the city.¹⁷

The early city maps of Marrakech from the 19th and 20th centuries do not show any tanneries in the *Riyāḍ La 'rūs* area. However, on the aerial photograph from 1917¹⁸ and especially on the aerial photograph taken by the Swiss pilot W. Mittelholzer in 1930, several enclosed courtyards with tanneries can be recognised over an area of approx. 5000 m² (Fig. 3). It can therefore be assumed that the tanneries were established at least in the 19th century, perhaps even earlier. The same photo by W. Mittelholzer also shows – immediately to the north – the historic cemetery, which had already been abandoned at the time and was labelled “terrain vague” on maps. Today, two modern schools stand on this site and almost all the tanneries have disappeared, probably since the 1960s, due to the progressive expansion of

¹² Frédérique Audoin-Rouzeau and Sylvie Beyries, *Le travail du cuir de la préhistoire à nos jours*, XXII^e rencontres internationales d’archéologie et d’histoire d’Antibes: actes des rencontres 18-20 octobre 2001 (Antibes: Éditions APDCA, 2002); Roy Thomson and Quita Mould, *Leather Tanneries, The Archaeological Evidence* (London: Archetype Books, 2011).

¹³ John Carman, “Where the Value Lies: The Importance of Materiality to the Immaterial Aspects of Heritage,” in *Taking Archaeology out of Heritage*, ed. Emma Waterton and Laurajane Smith (Newcastle upon Tyne: Cambridge Scholars Publishing, 2009), 192-208.

¹⁴ Jemma, *Les Tanneurs*, 17.

¹⁵ Jemma, “Éléments,” 237-38.

¹⁶ Jemma, “Éléments,” 238.

¹⁷ Jemma, *Les Tanneurs*, 19.

¹⁸ Taken by the French Army, now kept in the “Inspection des Monuments Historiques, Marrakech.”

the city.¹⁹ Only some traces of the former workshops remain on the surface in a small area. As the entire area is currently up for sale and these last structures are likely to be destroyed by new buildings, the archaeological investigation and documentation is a priority objective of the new project: a microtopographical contribution to the history of Marrakech.²⁰



Fig. 3: Marrakech, aerial view (detail), in front the tanneries of *Riyād La 'rūs*, on the left edge the historic cemetery, 1930 (Photo: ETH-Bibliothek Zürich, Bildarchiv).

The questions arise about when and why tanneries were established in this location. Their existence obviously contradicts the familiar “common rules” for positioning urban tanneries, which were usually located on the edge of the urban area due to emissions and the supply of raw materials and water.²¹ The location of the Islamic cemetery in the immediate neighbourhood also seems somewhat strange. It is therefore possible that in earlier times this area was the outskirts of the populated city – according to Wilbaux, the so-called “intermediate” spaces,²² that are characterised by crafts and commerce. However, the exact age and origin are currently unknown. It is generally

¹⁹ Mustapha Lamhaddar, *Marrakech métiers et doigté. Historique et documentation* (Mauritius: Éditions universitaires européennes, 2021), 247.

²⁰ See most recently also Ahmed Saleh Ettahiri, Hicham Rguig and Asmae El Kacimi, “Diagnostic archéologique sur le site historique de Diour Dbagh (Rabat, Maroc),” *Hespéris-Tamuda* 59, 1 (2024): 69-93.

²¹ See also Abdallah Fili and Ahlam Rhondali, “L’organisation des métiers polluants dans la ville islamique: l’exemple des ateliers des potiers,” in *Actas del II Congreso Internacional: La cuidad en al-Andalus y el Magreb* (Algeciras, 1999), Ayuntamiento de Algeciras, la Universidad de Cadiz y la Universidad Complutense de Madrid (Granada: Fundacion El Legado Andalusi, 2002), 657-72.

²² Quentin Wilbaux, *La médina de Marrakech. Formation et espaces urbains d’une ancienne capitale du Maroc* (Paris: Editions L’Harmattan, 2002), 51.

assumed that the urban spaces of *Riyāḍ La 'rūs* (with the tomb of Bou 'Amer) and Sidi Ben Slimane (Si Mohamed Ben Slimane El Jazouli, one of the city's seven saints) emerged in the Saadian period (XVIth/XVIIth century), an era of urban renewal and restructuring in Marrakech.²³ Q. Wilbaux also mentions the immigration of Andalusian people to this area.²⁴ From a purely topographical perspective, the location of the tanneries is favourable, as two (presumably old) main traffic arteries run from the border of the souk to the north and west respectively. The first connects the northern city centre with *bāb tāghzūt* (and from there on to *Sīdī Bl-'Abbās*), the second leads to the western city wall north of *bāb dukkāla* (to *bāb messūfa*, which could be located here?).²⁵

A Sacred Swamp?

Regarding the infrastructure, the question of water supply for the tanneries also arises. On the historical city map "Plan de la Ville de Maroc (La Rouge)" by P. Lambert (1868), a large water reservoir can be seen (approximately) near *Riyāḍ La 'rūs*.²⁶ The information provided by Jemma-Gouzon is particularly valuable in this context. She reports that a body of water inhabited by invisible forces formerly separated the two neighbourhoods of the tanners and the potters in the eastern part of the city: "Jadis, la limite séparant le quartier des potiers de celui des tanneurs était une mare, habitée par les invisibles gardiens des bornes et que l'on désignait sous le nom de *rijal el-merja*, "les hommes de la palude," maîtres du lieu anonymes."²⁷ However, Jemma-Gouzon also describes a very similar situation of a "holy water" for *Riyāḍ La 'rūs* ("le jardin du marié"): "...est habitée et protégé par ses maîtres du lieu, les *rijal el merja*, les hommes de la palude. Autrefois, en effet, au centre du quartier, se trouvait un cimetière, celui dit-on, des premiers habitants fondateurs du quartier. La mare était peuplée de grenouilles vertes. Les anciens disent que leur voix criarde dans la nuit était celle des maîtres du lieu, expression des ancêtres fondateurs du quartier."²⁸ According to Jemma-Gouzon, this "swamp or pond" also has a close (ritual) connection with weddings that used to be celebrated (exclusively?) in *Riyāḍ La 'rūs*.²⁹ There appears to be certain topographical and symbolic parallels between the two neighbourhoods of the tanners in

²³ Inigo Almela, "Religious Architecture as an Instrument for Urban Renewal: Two Religious Complexes from the Saadian Period in Marrakesh," *Al-Masāq. Journal of the Medieval Mediterranean* 31, 3 (2019): 272-302; Wilbaux, *La médina de Marrakech*, 29; 44-108; 254-75.

²⁴ Wilbaux, *La médina de Marrakech*, 51.

²⁵ Wilbaux, *La médina de Marrakech*, 29. Another position of "Bab Massufa" at Abbey Stockstill, *Marrakesh and the Mountains. Landscape, Urban Planning, and Identity in the Medieval Maghreb* (University Park: Penn State University Press, 2024), 75.

²⁶ Wilbaux, *La médina de Marrakech*, 160.

²⁷ Jemma, *Les Tanneurs*, 16.

²⁸ Jemma, *Les Tanneurs*, 17-19.

²⁹ Jemma, "Éléments," 67-9.

Riyāḍ La ‘rūs and the one in the eastern part the city: the proximity to magical waters, to an old cemetery, the existence of supernatural beings and the great importance of fertility. Once again Jemma-Gouzon: “Comme la peau, la tannerie ouvre, nous le verrons, sur la notion de fécondité. On peut dès lors supposer que l’existence d’un ensemble de tanneries dans le quartier de *Riyāḍ La ‘rūs* où se célébraient autrefois les mariages n’est pas fortuite: les tanneurs lavaient les peaux dans la mare, afin, disent-ils, de les pénétrer de la fécondité du lieu, et répandaient en retour sur le quartier les forces créatrices qui émanent de la manipulation des peaux. En outre, comme nous le verrons ultérieurement, les tanneurs avaient jadis un rôle dans la célébration des mariages. Leur présence dans ce quartier s’explique donc facilement sur le plan rituel.”³⁰



Fig. 4: Marrakech, *Riyāḍ La ‘rūs*, structures/vats of a historic tannery, 2022/23 (Photos: Thomas Reitmaier).

Whether this view, typical of Jemma-Gouzon, is sufficient, whether it is even correct, remains questionable.³¹ At least it suggests a certain historical depth for the tanneries in *Riyāḍ La ‘rūs*. Unfortunately, archaeological investigations have not yet been possible though several visits to the abandoned tannery enabled a rough documentation of the visible structures (Fig. 4). Individual structural elements of the *Chaîne opératoire* could be identified: brick-built pits of different shapes and sizes, a large stone for beating the leather, a mortar for producing dyes, workplaces for finishing the tanned leather (e.g. staking using the *sedriya*-knife), simple warehouses and

³⁰ Jemma, “Éléments,” 238.

³¹ This was confirmed by older informants on site in 2024. See also Wilbaux, *La médina de Marrakech*, 302-4.

other small workshops. A possible future detailed investigation would be to analyse the structures of earlier leather production (from the time of or even before Jemma-Gouzon's work) in participatory cooperation with today's tanners. These older forms are almost completely lost in the eastern part of Marrakech today.

The Ruins of an Old Tannery Mill

In preparation for the new project, various tanneries in the eastern part of the medina were visited in 2023, primarily to plan the anthropological section. In conjunction, an unusual, ruined building was observed on the edge of the '*dār dbāgh Ādouar*.' A large palm trunk was walled into the north or south wall of the ruin. The tannery itself is located on the western edge of this neighbourhood and is now the first tannery on the south side of the main street (Fig. 5). The ruins and the adjoining areas to the east have a slight 'offset' to the north, which leads to a narrowing of the main street (Av. *bāb dbbāgh*). The striking silhouette and the tannery, which was renovated a few years ago, can also be recognised on the early aerial photograph from 1917. To the east of the '*dār dbāgh Ādouar*' is a small tannery ('*dār dbāgh Si Laḥcen*'), which was closed down in recent years.



Fig. 5: Marrakech, aerial view of the tannery district with '*dār dbāgh Ādouar*,' 2019 (Photo: AXIGEO, 2019).



Fig. 6: Marrakech, ‘*dār dbāgh Ādouar,*’ mill in a: 2017 (?); b: 2009; c: December 2023 (Photo: <https://www.tour-marocco.com/curiosita/le-concerie-di-marrakech-a-bab-debbagh/>; João Leitão; Thomas Reitmaier).

The distinctive internal structure in the north-east corner of the tannery is a bark mill (*rhā*) for processing tanning agents. While tanning is still carried out in the neighbouring inner courtyard, the mill was already abandoned in the 1970s according to local people. Tourist photos and videos illustrate the progressive decay of the building, showing the walls and probably also the roof, were still intact until recently (Fig. 6). While the western end of the building was still present during the first visit (December 2023), now only the (tilted) southern wall of the approx. 6 x 6 metre structure remains following the damage caused by the Al Haouz earthquake in September 2023.³² Particularly striking was the fact that four walled-in ceramic vessels can be seen on the outer side of this wall, these artificial nests for pigeons is discussed below. Between the 12 and 14 February 2024 the opportunity arose for a partial “archaeological” uncovering of the collapsed mill and scientific documentation.³³ To a certain extent, this was truly a rescue excavation, as it can be assumed that the last traces of this historic building will soon disappear. (Fig. 7)

³² The anthropological research made it possible to document influences and damages of the earthquake at *bāb dbāgh*, in the tanner’s quarter as well as in some of the tanneries.

³³ We would like to thank the landowner for his kind permission, as well as the tannery workers for their support, information and co-operation.



Fig. 7: Marrakech, ‘*dār dbāgh Ādouar*,’ Screenshot of the digital 3D-model, the mill on the right-hand edge of the picture, 2024 (Photo: Călin Șuteu, Gigapixel Art).

“Le moulin à tan”

Again Jemma-Gouzon provides information and an illustration³⁴ (Fig. 8c) of the bark mills of Marrakech: “Dans de petits ateliers situés dans le quartier de bab debbagh, ces différents produits donnant le tanin sont moulus, broyés entre une grande meule fixe et horizontale et une autre tournante et verticale, mue par un mulet.”³⁵ She describes the production of the tanning agent ‘*takkaut*’: “Le femmes des tanneurs ont ensuite la charge de préparer le takkut, en aspergeant les fruits d’huile, puis en les triant dans des plateaux de vannerie. Les fruits sont alors amenés au moulin où ils sont moulus, prêts à constituer le mélange tannant. Le quartier des tanneurs à Marrakech compte deux moulins à tan où travaillent des berbères originaires...”³⁶ Information about the mill can also be found among the descriptions of the tanneries of Salé: “Un grande meule gisante horizontale, traversée en son centre par un pivot. Perpendiculairement à ce pivot, l’axe de la meule tournante, haute de 2 mètres environ, qu’un mulet fait rouler tout le tour de la meule gisante. L’appareil est complété par un râteau qui ramène le tan sur le chemin de la meule. Ce moulin se trouve toujours dans une pièce close, non en plein air. Chaque tannerie possède le sien, à l’exception d’une tannerie qui n’en

³⁴ A mill can also be seen for some moments in the film “Les tanneurs des Marrakech” (Dir. M. Aityoussef, 1967), from min. 11:30: <https://www.youtube.com/watch?v=kOhVuQ4eYoM>

³⁵ Jemma, *Les Tanneurs*, 39-40.

³⁶ Jemma, *Les Tanneurs*, 40.

possède pas, et d'une autre où il est provisoirement hors d'état de fonctionner."³⁷

Finally, a complete description of a tanner's mill exists in a footnote in Jemma-Gouzon's 1969 thesis, in which she reports a single (!) "ancien moulin à traction animale et un ou deux moulins mécaniques" for Marrakech: "La grande pièce haute et sombre dans laquelle s'effectue le broyage des différentes espèces d'écorces, racines ou galles se nomme adohan. Elle est traversée par une grande poutre constituée par un tronc de palmier et appelée meimuna, du nom de l'esprit invisible qui habite le lieu, du nom également de la sainte (Lalla Mimouna) dont le sanctuaire est situé en face de bab debbag (la Porte des Tanneurs) sur la rive de l'wad issil. Perpendiculairement à cette poutre se meut l'axe mobile (d'une hauteur de 1.80 m environ) en bois d'olivier nommé sif, l'épée, et fixé à la poutre maîtresse par un système de verrous et de cordages également désigné sous le nom de meimuna. Contre l'axe mobile est posé sur la tranche, la grande meule de pierre azerg (d'un diamètre d'1.20 m environ), maintenue par une sorte de verrou (lused) et fixée contre l'axe par une petite roue de bois plein (*ṣandūq* = boîte), elle-même fixée par deux chevilles. Dans le centre commun de la meule et de la roue de bois passe un axe horizontal mobile nommé lamejerl, auquel est attaché le mulet asserdun qui actionne l'ensemble. A cet axe est en outre attaché une sorte d'éventail en palme tressée nommé tassafrurt. Cet éventail traîne sur la base circulaire en pierre (*amsir*) d'un diamètre de 3 à 3.50 m environ et surélevée de 60 cm par rapport au sol. Sur cette base circulaire qui supporte l'ensemble de la meule et des axes, est éparpillé le produit à moudre. L'éventail, en suivant le mouvement de l'axe horizontal mû par le mulet, rassemble les débris d'écorce qui, éparpillés hors du champ d'action de la meule, n'auraient pas été broyés."³⁸ Jemma-Gouzon concludes the technical description with a symbolic interpretation of the main components in terms of a sexual act between man and woman.

The Archaeological Investigation of the Mill, 2024

The partial excavation and documentation of the mill confirmed the construction and function described by Jemma-Gouzon, but also provided new information about the terminology of the components and construction details.³⁹ Various parts of the mill are still preserved *in situ*. The most prominent element is undoubtedly the approximately 6 m long, horizontally orientated palm trunk, the ends of which are firmly fixed in the building's

³⁷ André Hardy, "Les Tanneurs de Salé," *Bulletin économique du Maroc* 5, 21 (1938): 192.

³⁸ Jemma, "Éléments" 243-44.

³⁹ A complete presentation of the structures, models and plans is in preparation. Such mills are of course closely related to oil mills, probably as an ancient legacy. See Henriette Camps-Fabrer, "Huile," *Encyclopédie berbère* 23 (2000). DOI: <https://doi.org/10.4000/encyclopedieberbere.1613> (accessed 06/09/2024).

walls. (Fig. 8a) When the mill was still in operation, this trunk spanned the interior at a height of around 2.5 metres above the clay floor. Today, the ruins are filled to a height of approximately 1-1.5 metres with building rubble, bricks and modern waste (iron and wood fragments, plastic, etc.). In the maximum 3.5 x 3 m trench – centred below the trunk – the slightly oval bedstone including the brick substructure came to light (Fig. 8b). This 3-6 cm thick bedstone (diameter approximately 1 m) has a hole in the centre; its horizontal surface is roughened by pick marks and grooves, some of which have been secondarily ground over by the grinding process. The circular substructure, only partially excavated and about 2.5 metres in diameter, consists of flat, bedded bricks and quarry stones. The construction rises unevenly from the lower outer edge, which is neatly plastered, to the bedstone in the centre. Because the bricks and chunks of mortar have broken off, its original shape cannot be reconstructed exactly.

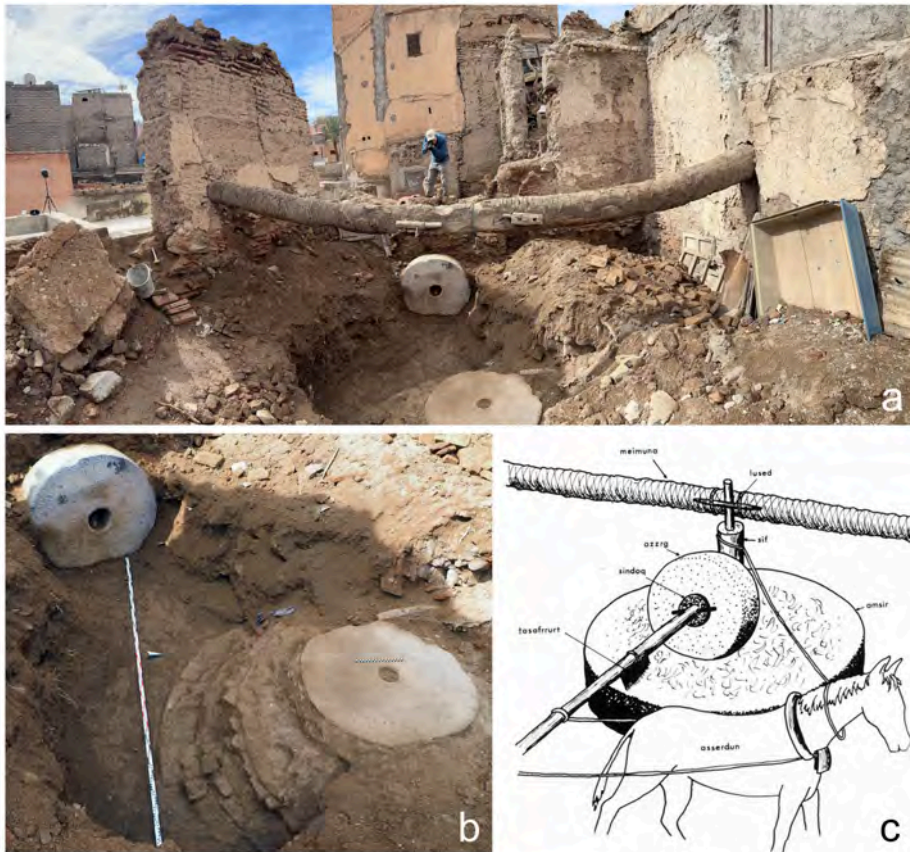


Fig. 8: Marrakech, ‘*dār dbāgh Ādouar*,’ a/b: Archaeological documentation of the tannery mill, 2024; c: Illustration of a mill in D. Jemma, 1971 (Photo: Thomas Reitmaier; Raphael Sele; after Jemma 1971, Fig. 15).

Other components of the mill’s structure have been displaced but are still nearby, and were also documented by photographs and drawings. For

example, the round granite runner stone is now leaning against the west wall of the ruins. It has a considerable diameter of 1.2 metres and a thickness of approximately 30 cm, the central hole measures 23 cm in diameter. Also discovered in the rubble was a 2 metres long wood beam, originally it stood vertically on the bedstone, fixed at the bottom with an iron pin in the stone slab. At the top, it was fixed to the horizontal tree trunk with small wooden elements, forged iron nails and probably with ropes allowing it to rotate on its own axis. The vertical runner stone rested on the bedstone, and was attached to the wood beam. A rectangular recess indicates where a crosspiece (missing) was attached, which continued outwards through the central hole in the runner stone. The crosspiece served as a lever for the pivot with which the draft animal (mule) could move the rotating runner stone in a tight radius over the bedstone. No material evidence of the previously mentioned rake was found.

No archaeological finds (or layers) were found that permitted determining the exact date of the mill. It can be assumed that the building was constructed at least in the 19th century, perhaps even earlier.⁴⁰ However, there were two objects directly on the surface that provide interesting information. One is a simple stone weight weighing approximately 9.6 kg, on which the remains of a lead setting and an iron ring can be seen (Fig. 9a). The weight was used to balance the scales or smaller metal weights to determine the weight of the raw materials or ground products used in the mill. The second object is a tripodal kiln furniture (fr. *pernette*) (Fig. 9b). Kiln furniture was used to support earthenware or other unfired ceramics when filling the kiln. Although the object seems ordinary, it exemplifies an important historical reality of Marrakech: the close and complex interdependence of the tanners and the neighbouring potters.

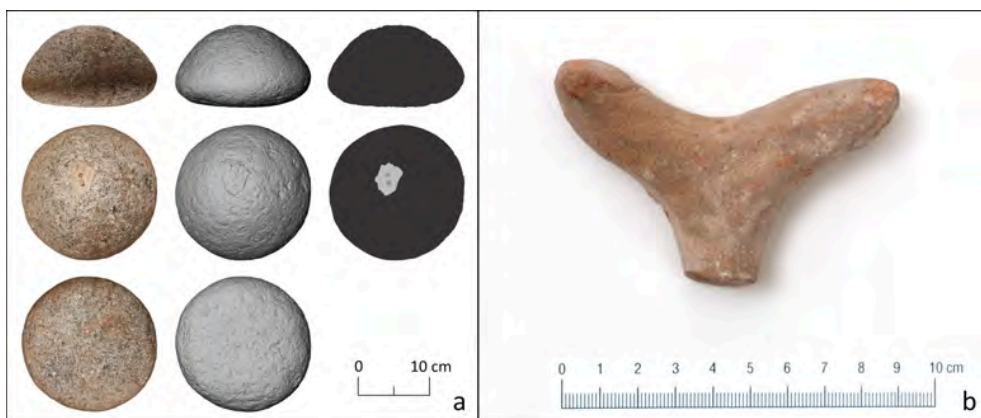


Fig. 9: Marrakech, ‘*dār dbāgh Ādouar*,’ mill: Surface finds of a stone weight and a kiln furniture, 2024 (Photo: Călin Șuteu, Gigapixel Art; Thomas Reitmaier).

⁴⁰ The landowner was unable to provide any precise details.

Tanners and Potters in Marrakech

Jemma-Gouzon has already repeatedly referred to these “d’*étroites relations de parenté*,” which have probably existed since the early days of the city, and the close technological, symbolic and family relationships between tanners and potters.⁴¹ Although the old quarter (*tabḥīrt*) of the potteries and brickworks, originally located immediately north of the tanneries (Fig. 10), had already been moved outside the city wall at the time of her research and later to the other side of the *wād isīl* (the area of the former cemetery, the place was called “*fekhāra*”), interesting aspects could still be identified in this respect.⁴² The waters (“*rijāl al-marja*”) inhabited by magical powers and separating the two areas have already been mentioned in connection with the tanneries of *Riyād La ‘rūs*. In the past, potters used various wastes from the tanning process for their work. Conversely, the tanners used certain raw materials from the pottery kilns or finished materials like a ceramic shard and a brick for the process known as ‘*ashqāf*,’⁴³ to scrape off the raw skin: “Puis la peau est frottée au moyen de cordes, opération désignée par le terme d’*ashqāf*, terme apparanté par ailleurs à la poterie *sheqfa*. Les déchets résultant de cette action son dénommés *shqifa* ou *tsaqiyat* et sont achetés par le potier qui s’en sert dans ses fours comme combustible.”⁴⁴ There are also close links between the two craftsmen in the manufacture and decoration of the drums called ‘*t’arija*,’ especially among the women.⁴⁵ The two areas are also linked on a symbolic level by the two natural elements of fire (= potters) and water (= tanners).⁴⁶ Finally, an interesting application of these entanglements could be the “Theory of Social Practices” of interweaving craft activities.⁴⁷

⁴¹ Jemma, *Les Tanneurs*, 89; Q. Wilbaux recalls an early description of Marrakech (XIIIth century) in which the potters north of the tanners and the lime kilns outside the town walls are mentioned. Wilbaux, *La médina de Marrakech*, 250.

⁴² Jemma, “Éléments,” 72-3; 290-92; Jemma, *Les Tanneurs*, 16; 43; 78-80; 89-90; Deverdun, *Marrakech*, I, 135.

⁴³ Jemma, *Les Tanneurs*, 43; 46 and Fig. 19.

⁴⁴ Jemma, “Éléments,” 199. Van Driel-Murray mentions tannery by-products, including “spent tan” as a major part of tannery economics, suitable as fuel but also as fertiliser. Carol van Driel-Murray, “Are We Missing Something? The Elusive Tanneries of the Roman Period,” in *Leather tanneries: the archaeological evidence*, eds. Roy Thomson and Quita Mould (London: Archetype 2011), 78-9.

⁴⁵ Women are responsible for decorating the drums with paint and putting goat leather on it. The *t’arija* drums are an essential part of the *daqqa marrākchia*, a traditional form of music typically for Marrakech, and for festivities during the first ten days of the new Islamic year.

⁴⁶ Jemma, “Éléments,” 78-80.

⁴⁷ For late medieval tanneries see Ulrich Müller, “Gerberei im späten Mittelalter. Überlegungen zur Anwendung der Theorien sozialer Praktiken für die Erforschung handwerklicher Tätigkeiten,” in *Craft Production Systems in a Cross-cultural Perspective*, eds. Martin Bentz and Tobias Helms (Bonn: Verlag Dr. Rudolf Habelt, 2018), 233-59.

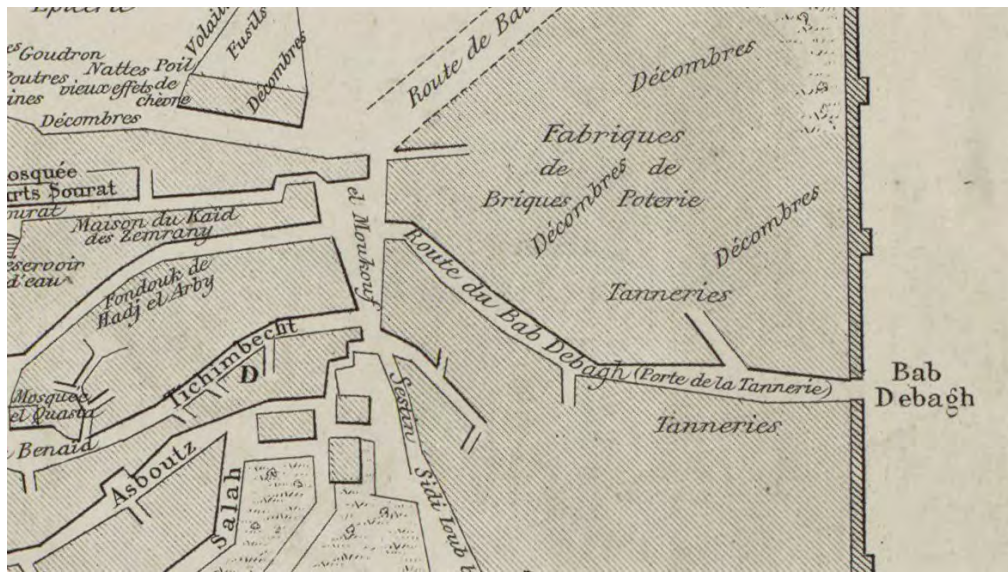


Fig. 10: Marrakech, on the map drawn by P. Lambert the proximity of tanners and potters is visible (Plan: P. Lambert, Plan de la vila de Maroc (la Rouge), 1868).

Four Pots in a Wall

As previously mentioned above in the section about the tannery mill, four walled-in ceramic pots were observed in the south wall (approx. 4 m long, approximately 3.5 m high) during the initial phase of the excavation (Fig. 11). The approximately 0.5 m thick masonry shows a two-layer structure. While the core consists primarily of rammed earth, the outer walls show various construction techniques. The reddish baked bricks and the stones of different sizes are arranged irregularly, but also in layers, sometimes in the form of a herringbone pattern (*opus spicatum*). The smooth, beige-coloured plaster of the exterior façade has crumbled away in various places. An almost 1 metre high concrete wall in front of the historic wall dates back to the most recent renovation of the tannery. Above this wall, the palm trunk is visible, which was incorporated during construction and protrudes approximately 40 cm from the wall at this point. Further up, on the western edge, a window frame can be seen. Particularly noteworthy, however, are the four firmly walled-in ceramic vessels. They are set horizontally into the masonry with their mouths facing outwards and lie – in pairs – roughly in line. The distance to the recent concrete floor is 2.3-2.4 metres, although the original external level of the mill was probably lower. The pots were installed at the time of construction, making it a deliberate act on the part of the occupants, but the legal status of the space towards which the openings face is not known.

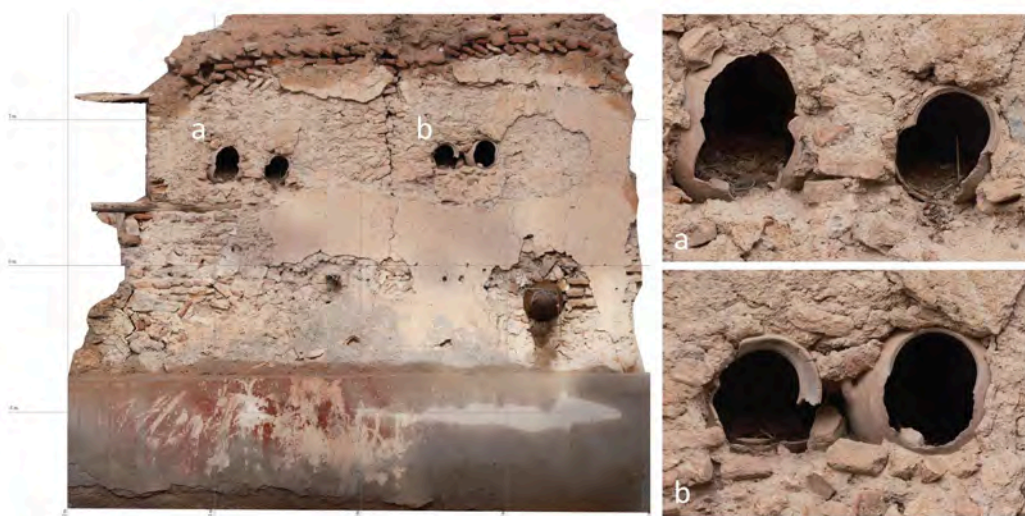


Fig. 11: Marrakech, ‘*dār dbāgh Ādouar*,’ 2024: Orthophoto of the southern wall of the mill, a: the jug sitting on its neck (left) with incised comb decoration and the pot (right) with alternating horizontal and wavy lines. b: the pot (left) and the jar with horizontal handles (Photo: Călin Șuteu, Gigapixel Art).

The vessels are medium-sized pots, lidded jars and jugs, probably turned or shaped using a mixed technique. These closed forms are ideally for housing a nest – however, all the openings were significantly widened after being walled in. The profiles of the shapes are either globular or ovoid. Jars and jugs undoubtedly have handles, horizontal for the former and vertical for the latter. Pots and jars were positioned with the opening slightly tilted upwards. Jugs were placed with the neck down and the side broken out to form the opening, the neck, having outlived its usefulness, had been previously removed. The pots and jugs are decorated with comb incisions in the form of horizontal or wavy lines. Although it is difficult to date the pieces of pottery still *in situ*, the shapes and the decoration suggest a post-medieval date, most likely from the modern period, starting in the region from the 16th century on. Inside the four vessels were found stalks, twigs, feathers and remains of birds’ nests, proving their function as artificial nesting places for pigeons. Such a use was also confirmed by the owner of the mill.

The Tanners and the Pigeons

These four pots walled into the south wall of the old tannery mill permit interesting associations. First, like the kiln furniture fragment, they show a connection between the tanneries and the potteries. As simple but elaborate artificial nesting places, they illustrate the great importance of pigeon breeding for the tanners – a topic that can only be summarily presented (Fig. 12). Artificial nesting places for birds and especially for pigeons are

widespread throughout the world, ranging from simple forms (made of wood, wickerwork, ceramics or other materials) on the roofs or walls of buildings to special dovecotes or pigeon towers, which have been widespread for many centuries, especially in the Islamic and Mediterranean world. In Northern Europe, in the early modern period, special types of pottery (with appropriate openings) were developed which were used exclusively as artificial nests for birds. The main purpose of this use was to expand the human diet with the eggs or the meat of birds (known in the Netherlands as “Spreeuwenpot”, in England as “birdpot”). Depictions of such pots as nesting places can be found in contemporary paintings by Dutch and northern European painters, e.g. the famous Pieter Bruegel the Elder (1525/30-1569).

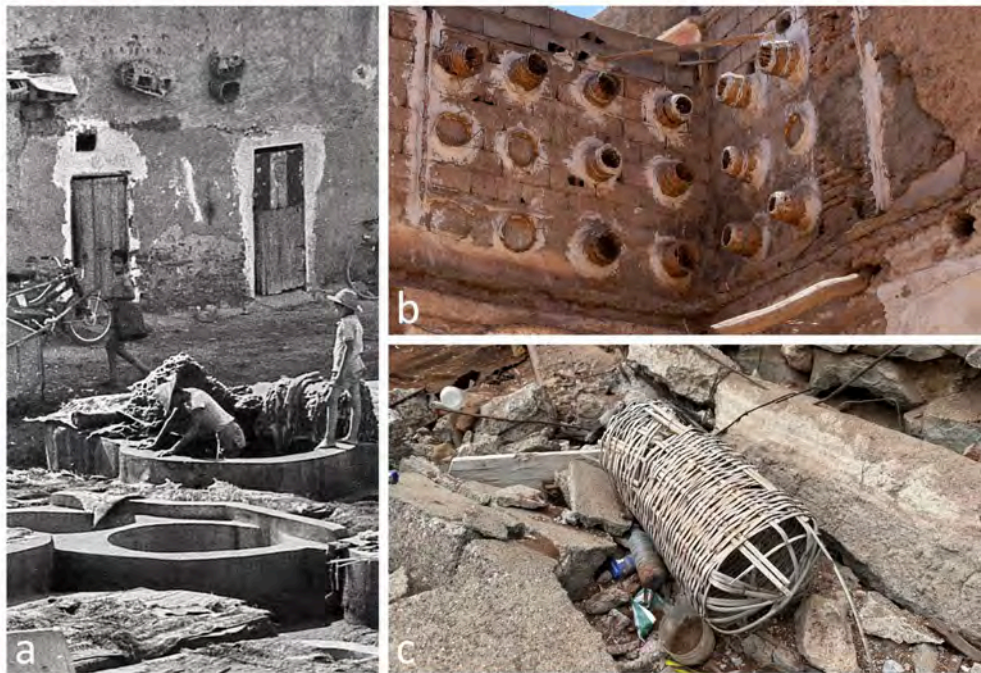


Fig. 12: Marrakech, a: Tannery with cages for pigeons, 1970; b: Ruin in the medina with 18 artificial nests for pigeons, 2024; c: ‘*dār dbāgh Ashtar*,’ woven basket for pigeons, 2024 (Photo: Archive Alberto Reinolter; Abdellah Azizi; Thomas Reitmaier).

The tanners were less interested in the pigeons themselves than in their excrements, in the form of bird droppings as a product for a preparatory step in the actual tanning process. This specific use of pigeon droppings is mentioned in early Islamic written sources as well as in descriptions of Moroccan tanneries in the XXth century. A. Hardy describes it for the Salé: “La fiente de pigeons provient des maisons où il y a des pigeons. Elle se vend par sacs de 10 à 17 kilos au prix de 5 francs, quantité suffisante pour douze à quinze peaux de chèvres. Presque chaque tannerie possède en outre son

élevage de pigeons.”⁴⁸ Jemma-Gouzon also describes the “stade de la fiente de pigeon,” but here too she goes again beyond a purely practical perspective when she writes: “Afin de préparer la peau à l’action des produits tannants, l’ouvrier la trempe dans un bain d’eau et de fiente de pigeon. Aussi, les tanneries, comme les demeures des ouvriers et des patrons, étaient-elles autrefois, habitées de nombreux pigeons. Le tanneur était en effet réputé pour être un grand éleveur de pigeons, représentant, nous l’avons vu, les âmes des morts. Or, dans le monde méditerranéen, l’élevage des pigeons est à l’origine un privilège royal. A Fès, la bastilla, sorte de tourte au pigeon est le plat royal par excellence. “Le seigneur seul avait le droit d’élever les pigeons.” En Kabylie, comme au Maroc, “les pigeons nichent près du tombeau de certains saints: dans toutes les civilisations ils représentent l’âme des morts et la fécondité obtenue par l’intercession des saints naguère encore des ancêtres protecteurs.”⁴⁹ She also ascribes a symbolic meaning to the Western cattle egret,⁵⁰ which is particularly revered and protected by the tanners in Marrakech, as “l’oiseau de l’eau et du monde souterrain.”⁵¹

However, pigeons still play an important role in Marrakech today in the culinary arts and folk medicine (Fig. 12b). Cages for pigeon breeding can be seen in many houses (or on many roofs) in the medina, and the birds are known to nest in many places in the niches of the city walls and historic buildings. As a multifaceted and positive symbol of friendship, peace and righteousness and a common representative in art, jewellery and textiles, the pigeon, its breeding and veneration form an interesting cultural and historical heritage. The four pots in the Marrakech mill are a subtle archaeological evidence of this.

“Lieux évanescents”

During the archaeological documentation of the abandoned mill, it was possible to locate another tanner’s mill that had been preserved above ground in the immediate vicinity. Based on the two or three mills cited by Jemma-Gouzon, it can be assumed that no other mills exist in this neighbourhood today. According to the local people, the second mill was in operation until 1994 and was also documented photographically (SfM) and by terrestrial laser scanner in February 2024. It corresponds to the archaeological situation in terms of function and structure, but here the floor inside the building was raised to the height of the horizontal bedstone. As a

⁴⁸ Hardy, “Les Tanneurs de Salé,” 195.

⁴⁹ Jemma, *Les Tanneurs*, 114.

⁵⁰ “Bubulcus ibis, *tir el bgar* or *al beqra*.” See Jean-Paul Zuanon, *Hommes et oiseaux au Maroc. Noms locaux, légendes et savoirs populaires* (Editions du Fournel, L’Argentière La Bessée, 2013), 29-30. Isabelle Six and Benoît Maire, *Marrakech à Vol d’Oiseaux. Petit guide d’ornithologie à l’usage des visiteurs de Marrakech* (Marrakech: Editions Sarrazines & Co, 2020), 26-9.

⁵¹ Jemma, *Les Tanneurs*, 114.

result, the lower part of the mill is no longer visible, but the wooden connecting elements, the rotating axle and the running stone attached to it are. (Fig. 13a)



Fig. 13: Marrakech, Tannery district, a: existing mill, 2024; b: only partially renovated ‘*dār dbāgh Ashtar,*’ 2024 (Photo: Thomas Reitmaier).

In parallel to the archaeological work, the entire tannery district was examined for other older building structures that could provide an insight into previous work processes and the everyday life of the tanners. Almost all the tanneries in Marrakech have been renovated and the old structures have been replaced by new buildings, mostly made of concrete. Only in the ‘*dār dbāgh Ashtar,*’ a rather small tannery on the southern edge of the district, unrenovated basins and small buildings could be documented (Fig. 13b). Within this tannery, there was also interesting evidence of the former keeping of pigeons, e.g. abandoned cages or woven pigeon baskets (made from reed).⁵² (Fig. 12c) This initial archaeological and documentary work will be continued in greater depth in the coming years and linked with Jemma-Gouzon’s research and the new project’s anthropological work. The first results are presented below.

Today’s Leather Production in Marrakech

The first moment inside of a tannery in Marrakech gives the impression of a journey into past, where an ancient craft is still practiced.⁵³

⁵² “Corbeille à pigeons: il possède des caractéristiques particulières correspondant à la nature des pigeons, à leur façon de vivre, à leur reproduction, à la répartition des tâches entre mâles et femelles.” Lamhaddar, *Marrakech*, 92.

⁵³ The current research will result in the master’s thesis entitled “*Dbbāgh dyāl Mrrāksh: Anthropological research on the tanners of Marrakech*” and is supervised by o. Univ.-Prof. i.R. Dr. Andre Gingrich (University of Vienna/Austrian Academy of Sciences).

When one takes a closer look, it quickly becomes obvious that much has changed in recent decades, and especially since the ethnography of Jemma-Gouzon was published in 1971.⁵⁴ Influenced by the French anthropological traditions of the 1950/60s,⁵⁵ her work contains detailed descriptions of the ‘traditional’⁵⁶ production process connected with symbolic interpretations based on her fieldwork in the mid-1960s for obtaining her doctorate.⁵⁷ The anthropological part of the current research project, theoretically positioned within the interdisciplinary Material Culture Studies⁵⁸ and the Anthropology of Technology,⁵⁹ aims to investigate how the process of leather tanning in Marrakech and the associated social, cultural and economic context for the tanners has changed in comparison to Jemma-Gouzon’s ethnography. The preliminary study and fieldwork were carried out in Marrakech in September 2023, followed by a longer stay in February and March as well as in July 2024.⁶⁰ It was decided to focus primarily, but not entirely, on one tannery in which all steps in the production of cow, goat and sheep leather could be observed. Qualitative data was collected using classical ethnographic methods of intense participant observation, situational conversations and semi-structured interviews to accomplish a comparative analysis.⁶¹ During the observation and with the help of the tanners, measurements were taken of workplaces, tools and the various vats. In addition, the tanner’s craft as well as their daily life was documented with photographs and short film recordings. Based on the qualitative data, the tanning process was then organized as a *Chaîne opératoire* (CO), which follows the structure of the CO

⁵⁴ Jemma, *Les Tanneurs*.

⁵⁵ Robert Parkin and Anne de Sales, “Introduction: Ethnographic Practice and Theory in France,” in *Out of the Study and into the Field. Ethnographic Theory and Practice in French Anthropology*, eds. Robert Parkin and Anne de Sales (New York/Oxford: Berghahn Books, 2010), 4-9.

⁵⁶ The description as “traditional” is questionable, as Jemma-Gouzon’s ethnography does not analyse the influences of the French Protectorate period (1912-1956) on craftsmanship in Morocco. See Hamid Irbouh, *Art in the Service of Colonialism: French Art Education in Morocco 1912-1956* (London/New York: Tauris Academic Studies, 2005); cf. Margaret S. Graves, “The Double Bind of Craft Fidelity. Moroccan Ceramics on the Eve of the French Protectorate,” in *Making Modernity in the Islamic Mediterranean*, eds. Margaret S. Graves and Alex Dika Seggerman (Bloomington: Indiana University Press, 2022), 117-38.

⁵⁷ See Jemma, “Éléments.”

⁵⁸ Dan Hicks and Mary C. Beaudry, “Introduction: Material Culture Studies: A Reactionary View,” in *The Oxford Handbook of Material Culture Studies*, eds. Dan Hicks and Mary C. Beaudry (Oxford: Oxford University Press, 2010), xviii-21.

⁵⁹ Maja Hojer Bruun and Ayo Wahlberg, “The Anthropology of Technology: The Formation of a Field,” in *The Palgrave Handbook of the Anthropology of Technology*, eds. Maja Hojer Bruun et al. (London: Palgrave Macmillan, 2022), 3-7, 9-12.

⁶⁰ The Moroccan translator Hicham Rafik provided linguistic support and facilitated entry into the field for the preliminary study in September 2023 as well as during the first two weeks of the fieldwork in February 2024. In the further course of the fieldwork the communication between the tanners and researcher was based on a mix of basic Moroccan Arabic (darija), English and French.

⁶¹ See Andre Gingrich, “Comparative Methods in Socio-Cultural Anthropology Today,” in *The SAGE Handbook of Social Anthropology*, eds. Richard Fardon et al. (London: Sage Publications, 2012), 201-14.

in Jemma-Gouzon's work.⁶² The CO intends to provide a further basis for interpreting archaeological data relating to tanning, but also to guarantee a comprehensive ethnographic documentation and description of leather production today.⁶³ In addition to the research on tanning, a longer field stay in February/March 2024 made it possible to document the preparations and the first period of the Islamic fasting month of *Ramaḍān* among the tanners. Additionally, interviews related to the mills were conducted with tanners as well as the owner of the tannery *Ādouar* to complement the archaeological data of the excavation. Furthermore, the unique opportunity arose to meet the 82-year-old ethnologist Jemma-Gouzon, who lives with her family in Morocco, for a biographical interview in Marrakech. A third fieldwork session in July 2024 observed the important Islamic celebrations of *āshūrā* among the tanners as it takes up a large and important part in Jemma-Gouzon's study.⁶⁴ This third visit provided an opportunity to supplement the qualitative data with further semi-structured interviews and observations to round off the fieldwork for the anthropological part.

The *Chaîne opératoire* (CO)

The steps for the leather production in a small tannery in Marrakech are shown here as a simplified *Chaîne opératoire* graph. (see Fig. 14) The vegetable tanning process is used to make cow (*bagra*), sheep (*ḥawlī*) and goat (*me'za*) leather, though with some small procedural differences between the bovine and caprine skins.⁶⁵ Soaking processes take place in rectangular vats (*mjiyer*) for the preparation steps and in round vats (*qaṣriya*) for the tanning processes. (see Fig. 14 Legend) Physical interactions with the skins are indicated in the CO by a lozenge shape, these take place on the ground in an area between the basins except for drying (outside of the tannery) and staking (in a room in the tannery). Leather production is affected by environmental circumstances (e.g. climate conditions, seasons, water supply) as well as the quality and availability of raw animal skins and chemicals. The end product's quality depends also on the tanner's technological knowledge and skills. It is still common that knowledge of leather production is passed on from father to son(s), but also other forms of knowledge transmission are present. Tanners who were interviewed, were looking for work after school and therefore went to a tannery. An apprentice usually joins a master⁶⁶ as a

⁶² Jemma, *Les Tanneurs*, 144.

⁶³ Nathan Schlanger, "The *Chaîne opératoire*," in *Archaeology: The Key Concepts*, eds. Colin Renfrew and Paul Bahn (London/New York: Routledge, 2005), 18-23.

⁶⁴ Jemma, *Les Tanneurs*, 99-104; Jemma, "Eléments," 121-42.

⁶⁵ Roy Thomson, "The Manufacture of Leather," in *Conservation of Leather and Related Materials*, eds. Marion Kite and Roy Thomson (Oxford: Routledge, 2006), 77-81.

⁶⁶ The social order within the tannery is organized hierarchically. At the top is the master of craft, called *m'alem diāl a-jeld* (master of skin). The masters of skin have a joint ownership on the tannery and the vats. Ownership is usually inherited by the oldest son of the tanner. The master is followed by the

co-worker and learns every step of the tanning process. There is also the option of completing a tanning course supported by the Moroccan government.⁶⁷

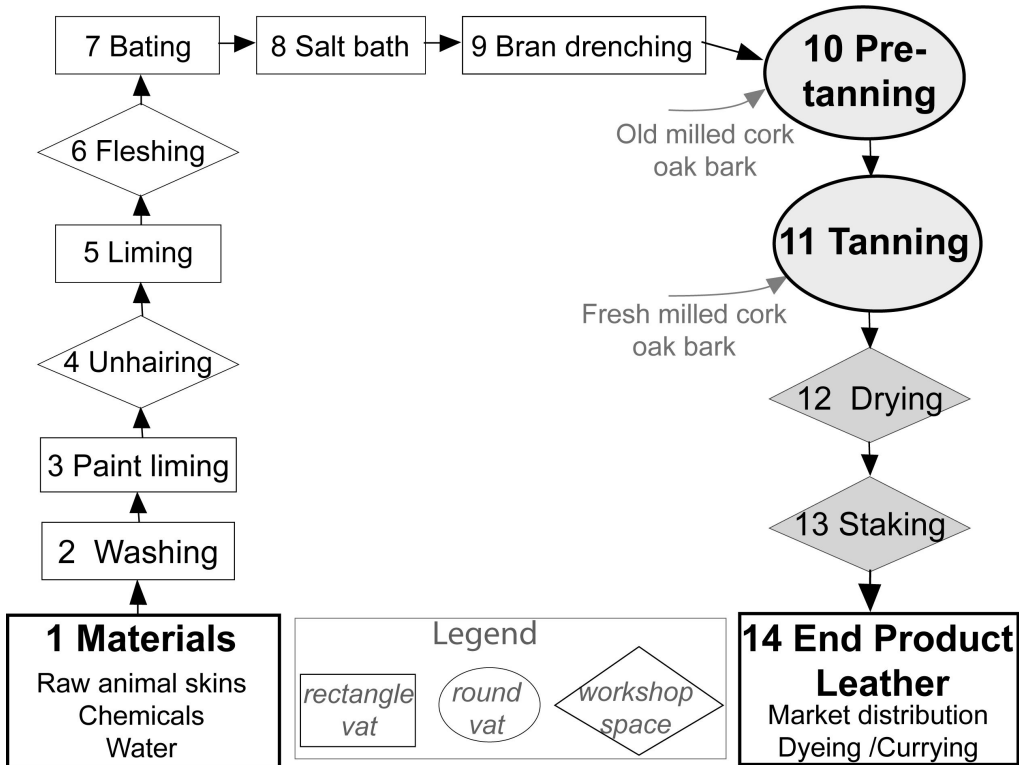


Fig. 14: *Chaîne opératoire* from raw animal skin to the end product leather, based on anthropological research, 2024 (Illustration: Marquita Volken and Victoria Immervoll).

The leather production process begins with the purchase of raw animal skins, water and other materials as salt,⁶⁸ lime powder, pigeon faeces, wheat bran, acid and shredded oak bark (Fig. 14.1 Materials). Most of the used materials are sold in 40 to 50-kilogram bags by small, specialized shops (*ḥānūt*) in the neighbourhood. Water (*al-mā'*) comes either from the municipal water network or from groundwater wells in the tanneries. Besides cork oak bark, water is one of the most expensive materials required for leather production. During the fieldwork, the market *sūq a-jeld* was visited,

mt'alem (co-worker) who usually works together with the master or another co-worker. At the hierarchy's bottom are the *ṣāne'*, day labourers, who are specialised in a single step of the production (e.g. fleshing). They often come from other regions in Morocco like Meknès.

⁶⁷ This programme is offered at the Centre de Qualification Professionnelle des Arts Traditionnels-Ancienne Médina in Marrakech. It is composed by the Université Sidi Mohamed Ben Abdellah and Ecole Supérieure de Technologie in Fès with support of the Ministère du Tourisme, de l'Artisanat et de l'Economie Sociale et Solidaire.

⁶⁸ The used salt comes from the Ourika valley, which is around 40 kilometres south from Marrakech.

the tanners also call it *sūq lkhānz* ('the stinky smell *sūq*'). The raw skins,⁶⁹ removed from the animal's body either by machine or by hand, come from various regions in Morocco and are 'cured' or preserved by sprinkling salt on the flesh side. The raw skins of cows, goats and sheep are auctioned through an intermediary agent called *dellāl*, who brokers between sellers and buyers.⁷⁰ Once the raw skins have been purchased, they are loaded onto a horse or donkey-drawn cart and taken to the tanneries in the eastern part of the medina (see Fig. 15a).

At the tannery the tails are cut off the raw skins with a knife (*mūs*) and washed in one of the above ground rectangular basins in the courtyard, removing salt and dirt in preparation for the tanning process (Fig. 14.2 Washing-*ashlell*). After washing, a lime paint solution is applied to the flesh side of goat/sheep skins with a flat brush and left to work overnight. The next day, the hair or wool on the goat/sheep skins is stripped off by hand. In the past, the hair leftovers were sold for the manufacture of ropes or tents.⁷¹ Cow skins are put in a *mjiyer* filled with a solution of sodium sulphide mixed with hydrated lime and water for unhairing (Fig. 14.3 (Paint) Liming-*amrāsh*).⁷² Cow skins are placed on a hard surface and unhaired with a dull bladed knife-like tool that pushes and scrapes the hair without cutting into the grain side (Fig. 14.4 Unhairing-*amrāsh*). Once this initial phase is completed, the tanners refer to the skins as leather for the first time.

The following steps (no 5 to 9) prepare the raw skins for the vegetable tanning process. The raw skins undergo a second, longer liming process (Fig. 14.5 Liming-*mjiyer*). Cow skins are put in a rectangular vat with a mix of old, spent lime powder and water for a few days followed by immersion in a mix of new lime and water, remaining in this solution for up to one week in summer and up to two weeks in winter. Periodically the skins are taken out in the process. The tanners call this 'breathing' (*tnaffes*) when the raw skins are taken out and left in the fresh air for a few hours before being put back into the vat. Goat/sheep skin is treated in the same manner, staying in the vat for a maximum of eight days in summer and up to ten days in winter, also being taken out a few times to 'breathe.'

⁶⁹ Muslim and non-Muslim slaughtering techniques were a topic in conversations between the tanners and the researcher. The raw skins sold on the market come from animals which are slaughtered in accordance with the Islamic rules. On the application of Islamic slaughtering rules to the traditional and mechanical method, see Muhammad Sajid Arshad et al., "Halal Slaughtering Process. Methods and Technology Used," in *Technology and Trends in the Halal Industry*, eds. Nor Aida Abdul Rahman, Kamran Mahroof and Azizul Hassan (London: Routledge, 2023), 123-38.

⁷⁰ Clifford Geertz, "Sūq: Geertz on the Market," edited and introduced by Lawrence Rosen (Chicago: HAU Books, 2022), 67-68.

⁷¹ Jemma, *Les Tanneurs*, 34.

⁷² John Henry Sharphouse, *Leather Technician's Handbook* (London: Leather Producer's Association 1995 [1971]), 97-9.

Before the skins pass to the next step, they are thoroughly rinsed in water, as it is done after every step in the production process. For the fleshing process, cow skins are placed on large flat surfaces between vats (concrete pads) (Fig. 14.6 fleshing-*assāwā*). The loose fibres and fat layers on the flesh side are shaved off with the same tool (*assāwā māḍīā*) which was used for unhairing but importantly for this step, the knife is continually sharpened with a whetstone during working. For goat/sheep skins this step is done with a normal knife.

The next step is bating, a softening process relying on enzymes and putrefying bacteria contained in pigeon droppings to remove or ‘digest’ proteins in the fibre structure of the skin (Fig. 14.7 bating-*bzāq*).⁷³ The skins are placed in a *mjiyer* filled with a mixture of pigeon droppings and water. Usually, the pigeon faeces are sold directly by breeders to the master of craft, who is responsible for acquiring materials. The dried pigeon faeces are delivered in barrels, it can happen that the sellers mix it with chicken droppings, which would ruin the skins. The pigeon excrements help to lighten the blue-greyish colour of the skins caused by the lime bath and makes the skin more supple for further processing. To neutralize the ammonia contained in the pigeon droppings, the washed skins get in a tall basin filled with water, acid and salt (Fig. 14.8 Salt bath-*ashlell*).

The next process is a two-part bran drenching process, the clean rinsed raw skins are placed in a basin with a mixture of previously used wheat husks, salt and water (Fig. 14.9 Bran drenching-*nukhāla*). In summer, the cow skins remain in the basin for a week, in winter for up to two weeks. The time in the old bran drenching bath for goat/sheep skins is shorter, two to four days in summer and ten days in winter. The second drenching is with new bran and water, giving the skins a silky shine due to the fermentation of the enzymes found on the bran, producing organic acids that neutralise any residual lime contained in the skins.⁷⁴ To foster the fermentation process the vats are covered with a blanket or mat. Instead of taking the skins out for breathing during this step, periodically the tanners turn the skins upside down within the basin.

To begin the tanning process, the cow skins are pre-tanned by immersion in a round vat filled with old or ‘weak’ tan liquer for two days (Fig. 14.10 pre-tanning-*debāgh*). The liquer consists of water and old, partially spent tannins from milled cork oak bark (lat. *Quercus suber*). The cork oak belongs to the Fagaceae plant family⁷⁵ and the tannin it contains is

⁷³ Sharphouse, *Leather Technician's*, 131.

⁷⁴ Sharphouse, *Leather Technician's*, 135-36.

⁷⁵ See John M. Jr. Fogg, “*Quercus suber* L. [family FAGACEAE],” JSTOR Global Plants Database (2023). URL: <http://plants.jstor.org/stable/10.5555/al.ap.specimen.abfm04415> (accessed 02/09/2024).

known as ‘*debāgh*.’ The cork oak bark is collected in the forests around the Moroccan capital Rabat and Meknès.⁷⁶ The bark gives the leather a reddish-brown colour and a further dyeing with other colours could not be observed in the tannery. The full tanning process is done by immersing the cow skins for one to three weeks in the round vat, named *qesriya*, containing fresh oak cork bark (Fig. 14.11 tanning-*debāgh*). The cow skins are taken out for breathing every day for around two hours. When replacing the skins in the vat, the tanners spread a full basket of *debāgh* on each skin before the next skin is slipped in (see Fig. 15b). The tanners put the goat/sheep skin just in a mixture of fresh oak cork bark and water, in summer for twelve days and in winter up to twenty days with breathing breaks as well. At this stage the goat/sheep skins are still in a complete tube shape, these are opened (*sheqqān*) with a knife by cutting the ventral line (along the belly) before being put in the new *debāgh*-mixture tanning vat.

For the post-processing, the leather skins are sun dried in a large field, a place called *herāsh*, located outside the old medina near the *wād isīl* (Fig. 14.12 drying). Spent tan is spread on the ground first and wet leather laid on top.⁷⁷ The drying process renders the tanned skins stiff and hard, so they are taken back to the tannery for the final process of softening by staking (Fig. 14.13 staking). This takes place in a specially adapted workshop (*hānūt*),⁷⁸ within the tannery, the room is fitted with a large beam (*ikhtār*) extending from wall to wall. The tanned skins are moistened by sprinkling with water before being staked. The worker uses the *sedriya*-knife for staking, scudding and trimming the tanned skins over the beam (see Fig. 15c). Sometimes the edges of goat/sheep leather are trimmed with a razor blade after being staked with the *sedriya* and before the delivery to the market. A sandpaper block (*amesāḥ*) is used for buffing the grain side. The ground floor room for the *sedriya*-step also functions as storage and on the first floor of the building are living quarters (*meşriya*). It was and still is common that some of the tanners live in the tanneries.

Once the softening by staking process is finished, the tannery work is done, and the leather can be sold on and further finished through dyeing and currying (colouring and greasing). (Fig. 14.14 End Product Leather). Alternatively, buyers can visit the tannery for directly selecting and purchasing leather. During fieldwork the *sūq lbṭāna* (see Fig. 15d) the market

⁷⁶ Said Laariby, “A Review Analysis of the Degradation of Cork Oak Forests in North Atlantic, Morocco,” *Journal of Biometry Studies* 3, 2 (2023): 54-6.

⁷⁷ Together with the used *debāgh*, the trimming scraps are brought to the *herāsh* place and put underneath the skins for the drying process. In the past, the spent tan and trimming scraps were given to the potters of Marrakech for their kilns.

⁷⁸ In general, these workshops are always oriented towards the inside of the tannery without an access to the street. The interior is adapted to the needs of the specific craft. See Geertz, “Sūq: Geertz on the Market,” 59.

for goat/sheep leather as well as the cow leather market *sūq bagra* were visited. Both markets are located near the Ben Youssef Mosque next to various craft quarters.



Fig. 15: Marrakech, a: Loaded cart carrying raw skins from *sūq a-jeld* to the tannery b: Tanner adding more cork oak bark to vat after “breathing” the skins c: Tanner using the *sedriya* on a cow skin d: *dellāl* showing finished goat leather to buyers at *sūq lbṭāna* (Photos: Abdellah Azizi).

Anthropological Results of the CO

Regarding the symbolic interpretation of Jemma-Gouzon, many of these connotations are no longer part of the tanner’s collective memory. The tanners explained that for them the skins are always alive throughout the whole production process as there is a constant change of colour, weight and thickness after every step. In some cases, the symbolic associations are still evident in the language and used expressions, such as the ‘breathing’ of the skins. Furthermore, in comparison to the CO of Jemma-Gouzon, there are significant changes in the production process of leather in Marrakech. Through using different materials like the lime paint solution for unhairing goat/sheep skins or a mix of sodium sulphide and hydrated lime for cow skins both the liming and the unhairing steps are more rapid.⁷⁹ During Jemma-Gouzon’s research, the tool called *hedīda* used for unhairing and for fleshing is now replaced by the *assāwā*-tool which was named *hāfīā* and usually used instead of the *sedriya* for skins which became too thin or damaged during the

⁷⁹ Jemma, *Les Tanneurs*, 34-5.

production.⁸⁰ For bating and bran drenching, it was common to put the skins in round basins, today these steps are done in a rectangular basin.⁸¹ The salt bath step for neutralizing the skins was not carried out nor was putting the skins first in a mixture of old wheat husks, water and salt. To reduce the ammonia from the bating step, only salt was put into the mixture of new wheat husks and water.⁸² Jemma-Gouzon described two types of materials used for tanning. The first is defined as ‘mimosa bark’ from the acacia family which gives the skins a red to pink colour.⁸³ The second tannin was *takkaut* that the women of the tanners were involved in its production and which is still strongly present in the collective memory of the tanners today.⁸⁴ Today, women are neither directly nor indirectly involved in the production of leather.

Formerly after the tanning step, the skins were sprinkled with a mix of water, oil and alum before being put on the ramparts for drying. Additionally, goat skins were scraped and polished with pottery sherds to prepare them for the yellow dye, the typical colour for goat leather from Marrakech. The dye was made from pomegranate peel and prepared together with water and alum in a pottery vessel (*sheqfa*) and put on the skins with a horn (*ansab*).⁸⁵ This step and the tools needed are still known among the tanners, but nowadays the skins are dyed after being sold at market by other craftsmen (e.g. shoemakers) with black, brown, red or yellow industrially produced dyes. Jemma-Gouzon observed that skins were stretched by two tanners before and after the skins had been processed with the *sedriya*-tool.⁸⁶ Graining was done with a mushroom shaped pottery (*teblā*) which had a grooved surface and was fixed on the wall in a way that the tanner had enough space to sit during work.⁸⁷ The stretching and the graining on the *teblā* is no longer performed.

Current Situation in the Tanneries

The following section provides some insights into the general situation of the tanneries in Marrakech today. Since the 1960s the number of tanneries in the old medina has been reduced by half. The remaining 20, mostly small-scale tanneries, were modernized from the 2010s onwards with many of the original workshops, vats, water ways and sources being renovated or even removed. The modernization had a significant impact on

⁸⁰ Jemma, *Les Tanneurs*, 35; 46.

⁸¹ Jemma, *Les Tanneurs*, 37; 39.

⁸² Jemma, *Les Tanneurs*, 39.

⁸³ Jemma, *Les Tanneurs*, 39; 43.

⁸⁴ Jemma, *Les Tanneurs*, 39-42.

⁸⁵ Jemma, *Les Tanneurs*, 43-4; 46.

⁸⁶ Jemma, *Les Tanneurs*, 44-5; 47.

⁸⁷ Jemma, *Les Tanneurs*, 46-7.

workplaces but also on the tanneries as social spaces. The *sedriya*-workshops have been downscaled and there is hardly any space for drying the tanned skins inside the tanneries or on the rampart, which is why the *herāsh* place outside of the city wall is used. In the tannery *dār dbāgh l-kbīra* (the big tannery), where Jemma-Gouzon primarily carried out her research, the living quarters of the tanners has mostly disappeared. Nevertheless, even today the tanneries are important social spaces where tanners come together in their leisure time joined by friends for having conversations, drinking tea, eating together or smoking *kīf* or *hashīsh*. There is no longer a strict separation between tanneries owned by tanners with Amazigh origin, specialized in the production of cow leather, or tanneries owned by Arabs, specialized in goat/sheep leather production as Jemma-Gouzon described it.⁸⁸ The tanneries have a shared ownership between Amazigh people and Arabs in which mostly all types of leather are produced. Most cow skin tanners still come from the tribe named *ayt idaw zddut*⁸⁹ in the area around the south-western town of Taroudant, but in general the group of tanners is more ethnically mixed.

Though insignificant during the time of Jemma-Gouzon's research, another influential factor today is mass tourism in the city of Marrakech.⁹⁰ In the tanners' quarter, several changes have been made in recent years to accommodate the steady increase in tourism. The main street has been recently completely renovated, creating new shop space for selling leather goods. Moreover, increased tourism puts pressure on the water supply.⁹¹ The current drought⁹² throughout Morocco has had deleterious effects for the tanners, a steady water supply being one of the most important needs for a tannery. The river *wād isīl* along the eastern part of the old medina has run dry. In the tannery, where most of the research was carried out, are three groundwater wells but only one of which is still active. The situation is even worse in other tanneries connected to the municipal water system. In most tanneries, each master has his individual water supply which is protected by a lock. The general scarcity of water and the fact that many tanners can no

⁸⁸ Jemma, *Les Tanneurs*, 65.

⁸⁹ Katherine E. Hoffman, *We Share Walls. Language, Land, and Gender in Berber Morocco* (Oxford: Blackwell Publishing, 2007), xviii; 12.

⁹⁰ Naimeh Rezaei et al., "World Heritage Classification and Tourism: Divergent Trajectories in Marrakech Medina (Morocco) and M'Zab Valley (Algeria)," *Journal of Heritage Tourism* 19, 1 (2024): 116.

⁹¹ María del Mar Alonso-Almeida, "Water and Waste Management in the Moroccan Tourism Industry: The Case of Three Women Entrepreneurs," *Women's Studies International Forum* 35, 5 (2012): 344.

⁹² See Adil Faouzi, "New EU Report: Morocco Faces Deepening Drought Crisis," *Morocco World News*, Feb. 22 2024. URL: <https://www.morocccoworldnews.com/2024/02/360986/new-eu-report-morocco-faces-deepening-drought-crisis> (accessed 02/09/2024). World Meteorological Organization (WMO), *State of the Climate in Africa 2023* (Geneva: WMO, 2024). URL: <https://library.wmo.int/idurl/4/69000> (accessed 08/09/2024).

longer afford it due to its high price has a strong impact on leather production in Marrakech.

Compared to the 1960s, the economic situation of tanners has become very difficult. The causes are a combination of various factors, ranging from the influence of the global market, the water shortage and the technological changeover from vegetable to chrome tanning.⁹³ This difficult economic situation forces many of the young tanners to quit work or get a side job to ensure their family's subsistence, which strongly effects the traditional form of knowledge transmission. When the youngest generation of tanners are asked if they want to pass on their knowledge to their sons, the answer was always no. In their opinion, the leather craft in Marrakech has no future.

Future Perspectives

In view of the recent renewal of the medina of Marrakech and the associated implications for the craft of tanning, the current ethnographical and archaeological project shows promise. The focus should be on a modern (= digital), preventive "archaeological rescue documentation" of the surviving structures from older times, in close connection with the continuation of anthropological studies and the collection of historical sources.⁹⁴ This could make a small contribution to the city's history and at the same time demonstrate the relevance of even "modest" urban monuments and ruins.⁹⁵ (Fig. 16) After all, these buildings, which are disappearing in many places, are important places of remembrance.⁹⁶ They are architectural archives of knowledge handed down over many centuries and are now quickly being lost. The best example of this is the difference seen in the five decades between Jemma's pioneering work and the vastly changed production modes alongside the backdrop of our Anthropocene present (mass tourism, economic globalisation, climate change, etc.). Community-based archaeology has an important role to play here: only through the physical excavation and preservation of these layers can envisioning and remembrance succeed. People should remain at the centre:

"Yet *Dār Debbāgh* remains a very human place. In the early afternoon, the apprentices head homewards, in gales of laughter and

⁹³ Tanneries that have switched to chrome tanning are most affected. Currently most of the tanning drums (*tono*) are not in use as the amount of water required for this technology is unaffordable. On the other hand, this increases the importance of the "traditional" vegetable tanning technique.

⁹⁴ The current challenges facing archaeology in Morocco, including "the absence of a mature rescue archaeology," have only recently been repeatedly highlighted, e.g. by Abdallah Fili, "The Maghreb Al-Aqsa?" in *The Oxford Handbook of Islamic Archaeology*, eds. Bethany J. Walker, Timothy Insoll and Corisande Fenwick (New York: Oxford University Press, 2020), 280.

⁹⁵ Þóra Pétursdóttir and Bjørnar Olsen, "Modern Ruins: Remembrance, Resistance, and Ruin Value," in *Encyclopedia of Global Archaeology*, ed. Claire Smith (New York: Springer, 2020), 7304-16.

⁹⁶ Tim Ingold, *Making: Anthropology, Archaeology, Art and Architecture* (Oxon: Routledge, 2013).

horseplay. Some of the older generation go to pray in the Mosque of Sidi Yacoub, open for the afternoon prayer. The visitor, after immersion in pungent pre-industrial process is happy to thread back to Jemaà el Fna. But what of the tanneries' future? ... A city's heritage is surely more problematic. The technical prowess of its people, their daily ways of doing and being, of living and laughing in the world are worthy of consideration."⁹⁷



Fig. 16: Marrakech, historical photo of the large tannery *dār debāgh l-kbīra*, 1933 (Photo: Archive Thomas Reitmaier).

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⁹⁷ Justin McGuiness, “Men of Leather: The Tanners of Marrakech,” in *Marrakech, the Red City*, eds. Barnaby Rogerson and Stephen Lavington (London: Sickle Moon Books, 2003), 143-48.

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العنوان: الآبار والقُدور وطُيور الحمام: مشروع جديد حول الآثار الأثرولوجية للمداغين بمراكش

ملخص: تأسست مدينة مراكش، الواقعة في سهل الحوز شمال الأطلس الكبير، على يد المرابطين في القرن الحادي عشر. ومع ازدهار المدينة سياسياً وثقافياً واقتصادياً منذ القرن الحادي عشر/ الثاني عشر فصاعداً، تم إنشاء حي للمداغين في شرق المدينة، والذي لا تزال معالمه قائمة حتى اليوم. وبالتالي، فإن صيرورة التحويل الحرفي للجلود الحيوانية إلى جلد عالي الجودة ومعالجتها، للحصول على منتجات مختلفة، يمثل بحق تراثاً ثقافياً مهماً منذ ما يقرب من ألف عام. ويلقي مشروع بحث جديد بعنوان: "دباغ"، الضوء على هذا الموضوع المعقد من منظور أثرولوجي وأثري. ومن ناحية أولى، ينصب التركيز على التوثيق الدقيق لحي المداغين التقليدي، من أجل دراسة المعرفة الضمنية التي توارثتها الأجيال، فضلاً عن الثقافة المادية وهياكل الانتاج. وعلاوة على ذلك، وقع الحرص على تحليل مكونات منطقة غير معروفة من المداغين الصغيرة في شمال المدينة.

الكلمات المفتاحية: مراكش، المدينة، المداغين، صناعة الجلود، علم الآثار (التاريخي)، الأثرولوجيا، الموروث الثقافي.

Titre: Fosses, pots et pigeons-un nouveau projet sur l'archéologie anthropologique des tanneurs à Marrakech

Résumé: Marrakech, située dans la plaine du Haouz au nord du Haut Atlas, a été fondée par les Almoravides au XI^e siècle. Avec le développement politique, culturel et économique florissant de la ville à partir des XI^e et XII^e siècles, un quartier de tanneries a été établi à l'est de la médina, qui existe encore aujourd'hui. La transformation artisanale des peaux brutes d'animaux en cuir de haute qualité et sa transformation en divers produits représentent donc un patrimoine culturel important depuis près d'un millénaire. Un nouveau

projet de recherche, “debagh,” fait la lumière sur ce sujet complexe d’un point de vue anthropologique et archéologique. L’accent est mis sur la documentation précise du quartier “traditionnel” des tanneurs afin de documenter les connaissances tacites transmises de génération en génération, ainsi que la culture matérielle et les structures de production. Egalement, une zone peu connue de petites tanneries au nord de la médina sera analysée.

Mots-clés: Marrakech, Médina, tanneries, industrie du cuir, archéologie (historique), anthropologie, patrimoine culturel.