Arabic bookmaking and terminology as portrayed by Bakr al-Ishbīlī in his *Kitāb al-taysīr fī ṣinā'at al-tasfīr*

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In surveying classical and post-classical Arabic literature for titles on bookbinding, one is surprised to learn that all the texts of relevance to this field which have come down to us were composed in the Maghreb. It is also surprising that we have at our disposal only three compositions of this kind. Yet we all know that the book in Islamic civilization has played a fundamental role and that from the Abbasid period onwards there existed a profession called *wirāqah*, which was directly concerned with book production and distribution. It is not inconceivable that other textbooks on this craft will one day emerge. Suffice it to mention here that one such work composed by a certain 'Abd al-Raḥmān ibn Abī Ḥamīdah and entitled *Tadbīr al-safīr fī ṣinā'at al-tasfīr*, housed in the Egyptian National Library, has recently come to our attention[1].

The three above-mentioned works are *'Umdat al-kuttāb wa-'uddat dhawī al-albāb* of al-Mu'izz ibn Bādīs (d.454/1062)[2], *Kitāb al-taysīr fī ṣinā'at al-tasfīr* of Bakr ibn Ibrāhīm ibn al-Mujāhid al-Lakhmī al-Ishbīlī (d.628/1231 or 629/1232)[3] and *Ṣinā'at tasfīr al-kutub wa-ḥall al-dhahab* of Aḥmad ibn Muḥammad al-Sufyānī (fl.1029/1619)[4]. The works of Ibn Bādīs and al-Sufyānī are well known. This, however, cannot be said of the work of al-Ishbīlī. The most recent and important studies on Islamic bookbinding published in the West do not even mention this handbook in their bibliographical sections.

Bakr al-Ishbīlī was a man of letters (*adīb*) and poet, who earned his living as a bookbinder. His skills were greatly appreciated at the Almohad court. He was most probably involved in the restoration of the 'Uthmanic codex (*al-Muṣḥaf al-'Uthmānī*), which was given to the first Almohad ruler 'Abd al-Mu'min (reg. 524/1130 — 557/1162) by the people of Cordova (Qurṭubah)[5]. His textbook on bookbinding was composed in the reign of Abū Yūsuf Ya'qūb al-Manṣūr (reg. 580/1184 — 594/1198) and dedicated to him[6]. Only one copy of the original text has survived. Although collated in 1044/1634, the manuscript is unfortunately imperfect as it does not contain the illustrations promised by the author and a number of words are wanting due to damage done by worms[7]. In addition, the printed text contains many distortions and errors, some found in the exemplar and some most certainly due to bad printing. Despite this, the work of al-Ishbīlī, as we know it, gives us already enough information to enrich our knowledge of Arabic bookmaking. It is the most comprehensive of manuals for bookbinders. It describes techniques and processes not to be found in the other two texts and, what is most intersting, employs, in many situations, a very different vocabulary. For example, the characteristic envelope flap is referred to by al-Ishbīlī as *udhn* (lit. ear), whereas the same is called by al-Sufyānī *marji'* (lit. return, perhaps indicating the place to which one returns after having interrupted one's reading, thus serving as a bookmarker, or the fact that the flap, being an extension of the lower cover, makes, as it were, a return journey) or *lisān* (lit. tongue)[8]. We notice other words connected with the human body: *shidq* (lit. cheek, i.e. casing or covers), *ḍirs* (lit. molar tooth, i.e. pallet or interlace), *qafan* (spine, back), *ṣadr* (lit. chest, i.e. fore-edge or fore-edge flap), *wajh al-kitāb* (lit. face of the book, i.e. upper cover or front of the textblock). Most of the technical vocabulary, needless to say, is no longer used in modern Arabic works on bookbinding[9]

The main body of *Kitāb al-taysīr* is divided into twenty unnumbered chapters (*abwāb*). They are:

1. tools (*adāh*)
2. adhesives (*aghriyah*)
3. sewing gatherings (*takhzīm*)
4. backing (*taqfiyah*)
5. aligning quires and trimming (*taswiyah*)
6. endbanding (*ḥabk*)[10]
7. lining inner covers (*tabṭīn*)
8. paring leather (*bashr*)
9. mounting, covering with leather (*tarkīb al-jild*)
10. working with worn bindings (*al-asfār al-bawālī*)
11. cooking brazilwood (*ṭabkh al-baqqam*)
12. tooling (*naqsh*)
13. creating interlace (*naqsh al-ḍirs*)
14. examples (*amthilah*, not supplied)
15. making knobs and fasteners (*azirrah wa-'uran*) for clasps[11]
16. making sleeve-cases (*aqribat al-maṣāḥif*)
17. making boxes (*al-aqribah al-mabnīyah*)
18. making boxes for tools (*majāmi'*[12]
19. remarks, 'tips' (*nukat*)[13]
20. flaws in bookbinding (*'uyūb*)

Of particular importance are the sections on weaving endbands and tooling. The Greco-Roman or Coptic tradition is quite evident in endbanding. Blind tooling done with heated tools and the panel stamp, including the oval medallion, were already in use in the time of al-Ishbīlī. So was gold tooling and arabesque (vegetal) decoration.

Before we commence this short analysis of al-Ishbīlī's work it has to be stated that some of the technical terms used by him are not always clear. Many of them cannot be found in standard dictionaries[14]. On many occasions one has to resort to one's imagination in order to visualise a given ornament or technique. The lack of illustrations in this manual as well as a dearth of surviving specimens of the period call for caution. After having perused this work, our immediate reaction was the desire to reconstruct the picture of the bound Arabic codex by summarising the processes involved in its making.

We notice in the first place that Arabic codices were bound in either wooden boards (al-maṣāḥif al-mulaw-wahah) or pasteboards (al-maṣāḥif al-sifrīyah). The word muṣḥaf does not necessarily refer here to a copy of the Qur'an, even though Qur'anic codices were more likely to have been bound in wooden boards. The word which probably does refer to a bound Quranic codex is rab'ah[15]. Al-Ishbīlī appears to make another interesting distinction between muṣḥaf, on the one hand, and sifr and kitāb, on the other. The muṣḥaf is a codex consisting of parchment leaves and sifr or kitāb have paper textblocks[16]. Cedar (arz) was used for wooden boards. The doublures (baṭā'in) were made of ordinary leather (jild), soft leather (sulfah, used among other things as inner lining of shoes), cloth (khirqah), paper (kāghad), parchment (raqq) and/or silk (khazz). The codex could consist either of quires and was thus called mukarras (from kurrās, i.e. quire, gathering) or, what is of significance, bi-folios or conjugate leaves (zawj, pl. azwāj, lit. pair, couple). The quires and bi-folios could be glued together. The adhesives (ghirā', pl. aghriyah) were pastes made of brown (?) flour (al-daqīq al-aḥmar), high quality wheat flour (darmak), wheat starch (nashan) and ibrijmah (most probably similar in consistency to darmak)[17]. Nashan being less solid was more suitable for gluing paper. The parchment codex required a paste made of darmak, because it was thicker than nashan. Adhesives were prepared either by cooking the main ingredient in water or in the infusion of absinthe, otherwise known as wormwood (afsitīn, ifsantīn) or the roots of colocynth ('alqam), or aloe (ṣabir, ṣabr), all being strong purgatives. Al-Ishbīlī says that it was good to use mixed glues (ghirā' mashūb), that is the second category, as protection against worms. But because the mixed adhesives turn dark and ugly, the first category was recommended for gluing quires and conjugate leaves. Worms, as we know, were formidable enemies of books. The more scientific methods employed

against them were not enough. An addendum (da-mīnah) to al-Ishbīlī's work says that books should be fumigated with the feathers of hoopoes and that the inscription yā kaykataj was also quite effective[18].

The main implements (mawā'īn) were: miqrāḍ (shears), miqaddah (long, crescent-shaped knife for trimming, used by the people of the Mashriq), milzam (press, most probably a screw press, for backing), another milzam (press for shaving), iron implement (ḥadīdah) for tightening and unfastening the press, ḥajar al-misann (whetstone), mihaṭṭ (tracer), ishfā (awl, punch), ishfā raqīq (thin awl for work with sleave cases and the like), ibrah (needle for endbanding codices with wooden boards), al-thaqīl (thick needle?), called by its opposite al-khafīf (thin), midlak (burnisher for doublures and the application of saffron, za'farān, on them), kurah min khashab (wooden ball for burnishing, used by some binders instead of midlak), sikkīn (knife for trimming, shaving), lawḥayn (two wooden boards, used during lining), takht (wooden pressing boards), rukhāmah (marble slab), ṣafīḥah (slab for tooling), minshār (saw), mimlasah (cf. malisa, to be smooth, even; plane-like instrument), midlaf (cf. dilfah, wing of a two part window or door; perhaps a chisel), mithqab (drill for making holes in boards when endbanding), miṭraqah (mallet), miqṭa' (implement for fixing and removing decoration from covers), mijwāb (cutter for gold leaf), 'ushar (for the application of gold, with the central part, which can either be engraved or plain, see below), malasah (perhaps mimlasah, as above), also known as misqalah (polisher used in tooling), mishṭab (cf. shaṭbah, shaṭṭābah, broom; perhaps a duster, whisk), qarṭabūn (square), ḍābiṭ (compass), qubṭāl (also known as misṭarah, that is a ruler or straight edge), qānūn (trapezium-like instrument for tabyīt, i.e. creating compartments and frames), ḥajar al-burkān (pumice for smoothing the edges after trimming), three pieces of wood (aqlām) for making boxes for tools[19].

Before sewing (takhzīm), quires and conjugate leaves had to be put together (tadbīr). They had to be arranged in such a way that the lines (misṭarah) were symmetrical. The back was pounded with a mallet (taṭrīq) to make it even and minimise swelling. Silk thread (ḥarīr) was preferable particularly for parchment leaves because of its fineness and strength. Unlike paper doublures, those of leather and cloth could be sewn to the textblock. Parchment quires were sewn in twos, whereas paper quires individually. The next step was to back the textblock. The backing (taqfiyah) consisted of rounding (taqbīb) of the spine. Al-Ishbīlī tells us that the spine (qafan) should be rounded (muqabbab) and not flat (musaṭṭaḥ), otherwise, when the book becomes old, the fore-edge flap (ṣadr al-kitāb, al-muqaddam) will protrude. He explains that with age spines tend to go flat. Therefore, the spine should be rounded at the beginning to avoid this consequent flaw. The spine was then lined, the

Figure 1. Terminology for the constituent part of Islamic books in codex form. (After a drawing in Gulnar Bosch, John Carswell and Guy Petherbridge, *Islamic Binding and Bookmaking* (Chicago 1981).

شدق
CASING, COVERS

endcap   حبك *endband*   قفا SPINE   وجه UPPER COVER

doublure hinge

لوح *board*

صدر، مقدم
FORE-EDGE FLAP

LOWER COVER

رأس / أعلى الكتاب *head*

horizontal axis

vertical axis

صدر *fore-edge*

مقلم

turn-in
طرة

joint

spine lining/hinge   *spine lining*

tail   أسفل الكتاب

DOUBLURE

ENVELOPE FLAP   *fore-edge flap lining and hinges*   DOUBLURE   بطانة
أذن   بطانة

معلقة، راجعة

TEXTBLOCK
إضبارة
(سفر، كتاب، مصحف)

كراسة
QUIRE, GATHERING

flap أذن

sleeve-case قراب

flap أذن

رأس *head*   رأس *head*

سطر *line*

ورقة *leaf, folio*   ورقة *leaf, folio*

طرة *margin*

مسطرة *number of lines per page*
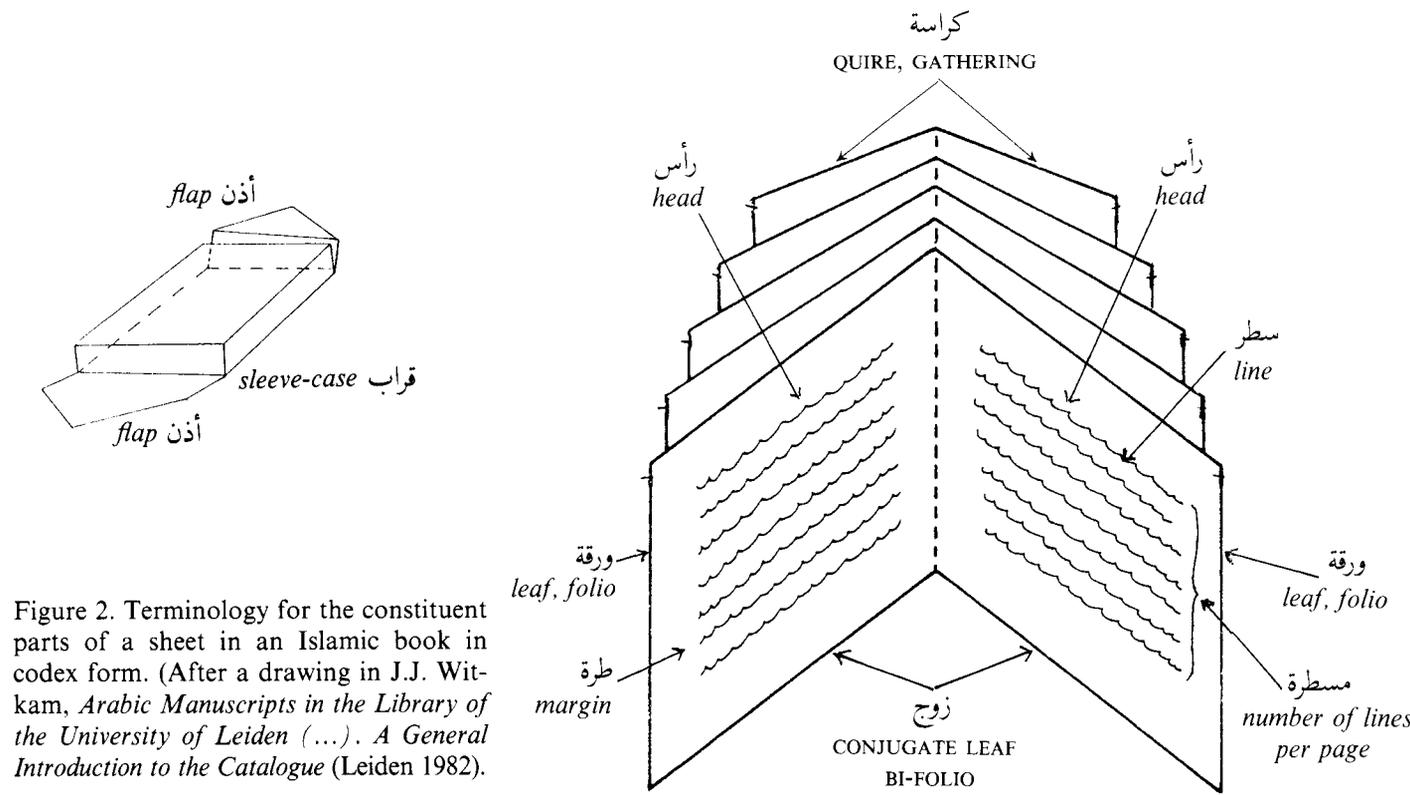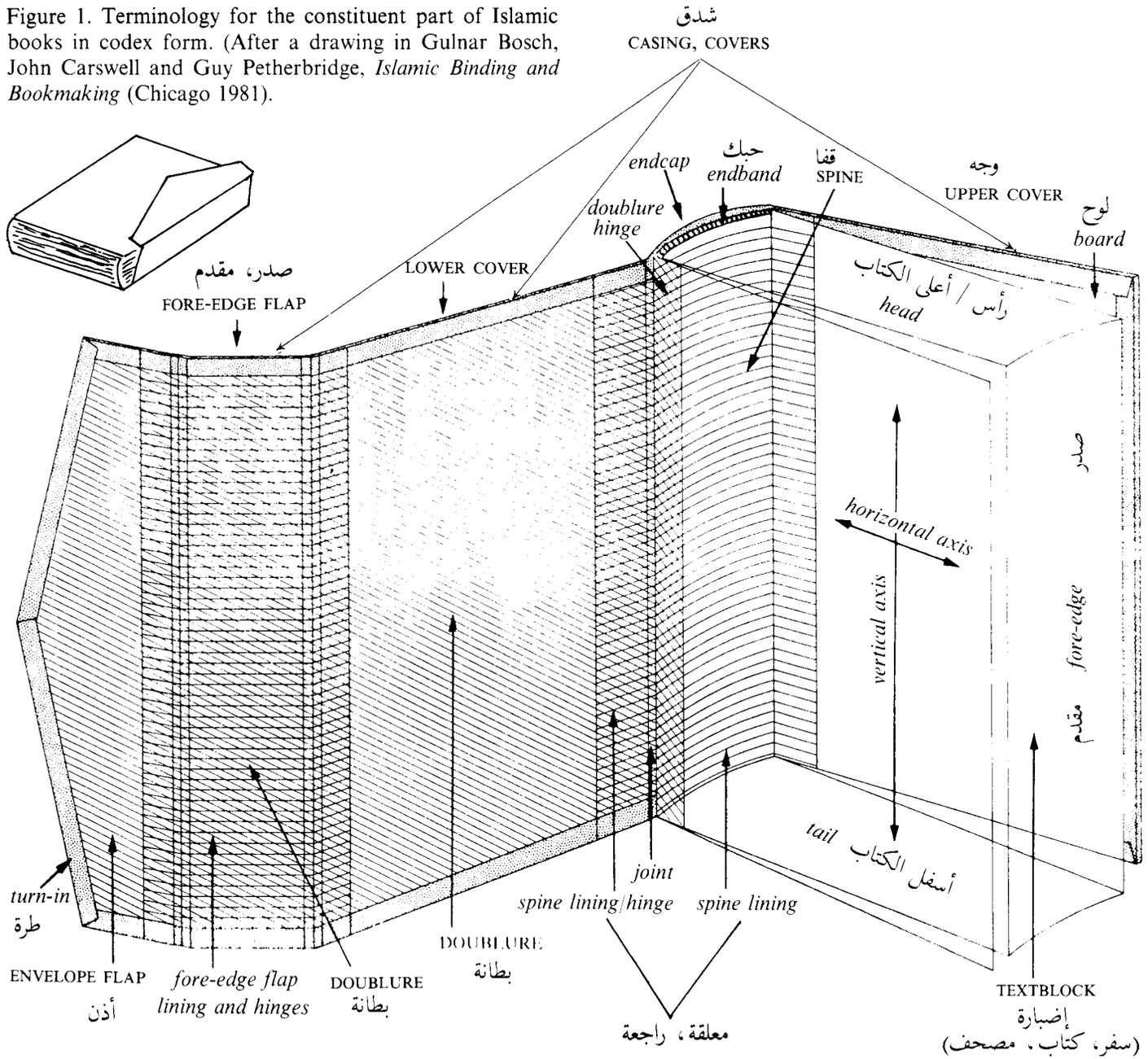
زوج
CONJUGATE LEAF
BI-FOLIO

Figure 2. Terminology for the constituent parts of a sheet in an Islamic book in codex form. (After a drawing in J.J. Witkam, *Arabic Manuscripts in the Library of the University of Leiden (...). A General Introduction to the Catalogue* (Leiden 1982).

hinges glued on to the inner cover and three to four sheets of paper (*ṭāqāt*) were placed on top of them. In codices with wooden boards strips of parchment (*muʿallaqāt*) were inserted between the board and the textblock (*bayna al-lawḥ wa-al-muṣḥaf*) in such a way that they would overlap onto the spine. The hinges were glued onto the inner board and pasted over with a sheet of parchment. Some bookbinders, however, would use paper for this purpose. Codices bound in paste-boards could have their doublures made of cloth (*khirqah*). Al-Ishbīlī mentions, however, that he saw binders covering the spine with cloth and the inner covers with soft leather (*sulfah*, not *suflah*, as given in two other instances).

When reparing worn or damaged codices (*al-asfār al-bawālī*), al-Ishbīlī recommends putting slips of paper (*ʿalāmāt min al-kāghad*) in the middle of quires to make sure that one does not miss a quire when endbanding[20]. Strips of leather lining (*muʿallaqāt min al-jild*), called *rawājiʿ*, should also be used no matter whether the doublures are made of leather or paper. There were also binders, he adds, who used a single leather *muʿallaqah* to fasten the quires to one of the linings of the covering (*baṭāʾin al-kiswah*). One could, however, glue the *muʿallaqah* onto the doublure or place the doublure over it and al-Ishbīlī states that the latter method was better.

The format (*qālib*) was arrived at by measuring the textblock using *qarṭabūn* and *ḍābiṭ* or by marking the quires. The textblock was shaved (*takhfīḍ*), its edges smoothed with a pumice and the endbands woven (*ḥabk*). The core of the endband was a leather thong (*maftūl*) around which the band was woven. One should begin with an ordinary thread (*khayṭ*) piercing the middle of the quires (*karārīs*) and going round the leather thong. The needle would pass through the middle of the first and last quires twice, in order to make it stronger. This preliminary sewing was called *al-khayṭ al-tashbīk*. The second stage was the application of a silk thread (*ḥarīr*). There were however those who used only either ordinary thread or silk thread for the preliminary process, as well as end-banding (*taḥbīk*). According to al-Ishbīlī eight types of Byzantine (Greek) endbands (*al-aḥbāk al-rūmīyah*) were known in his time. However, he describes only four of them, because the other four were more complicated and required demonstration: 1. endband of one colour, 2. chess board-like (*al-shaṭranjī*), in which the colours alternate, e.g. red and green 3. chevron-like, zigzag-like (*al-muḍallaʿ*, lit. ribbed) 4. a variant of the chevron endband called *al-dālī* (rotating or trellis-like). The endbanding here was done with two needles. In codices with wooden boards the end-bands should be attached to the holes pierced in the wood. The author, although he had not seen it, also reports that some bookbinders used the endbands to inscribe on them the title of the book[21].

The next step in the process of binding was to pare the leather (*bashr al-jild*) and mount it on the boards (*tarkīb*). It was done with one or two pieces of leather. Two pieces were used if the flap (*udhn*) was prepared separately. This type of binding is called *al-mukassar* (lit. broken). When attaching wooden boards a piece of paper was placed between the board and the leather covering to protect the leather from moisture issuing from the wood. The sheet of paper acted also as a padding when the leather was tooled. The single envelope flap is an interesting element here for it seems to have appeared in Islamic binding about the time when al-Ishbīlī practised his craft. Before then codices are supposed to have been enclosed on all four sides and fastened by means of knobs and thongs attached to the upper and lower covers[22]. The author of our text says that the principle behind the flap is that it should lie on the textblock (*maṭbūʿ ʿalā al-sifr*) so that it would not need a knob and thong. He also seems to be saying that there were codices with flaps held over the upper cover (*wajh al-kitāb*) and fastened with *zamm* (most probably a thong used to tie up the book). The flap should be smaller than one half of the cover by the head of the knob. Books were also covered with *shidq* (or *shadq*). The word *shidq* according to Lane and Dozy signifies the inner sides of cheeks and the cheeks themselves[23]. In our context, this is most likely the covers or casing. This type of cover consisted of a piece of leather, two or three sheets of paper and, on top, a sheet of parchment. The edges (*ṭurar*) of the leather were turned in and and glued onto the parchment sheet. The covers (*ashdāq*) were usually made of one piece of leather, particularly in the case of *al-maṣāḥif al-sifrīyah*, and thus formed a casing. The layers of paper and parchment constituted paste-boards.

Having covered the book, the next step was tooling (*naqsh*). Various tools (*ṭawābīʿ*, *ḥadāʾid*) and stamps (*khawātim*) were used for this purpose. They can broadly be divided into tools for geometrical and vegetal design. There are among them: cornerpiece (*rukn*), fillet (*ṭarīq*), mandorla (*lawzah*) and two types of stamps called *ʿushar*, (literally asclepias gigantea, a type of Eurasian vine, most probably some kind of vegetal decoration), one of which, with or without an incised design, served for the application of gold. There is also *waraqah* (vine leaf), *mishʿār* (from the verb *shaʿara*, to feel, sense; cf. also *shaʿr*, hair; most probably a tendril), *ṭuʿmah* (lit. bait; bag; also thread going through the chain, possibly a calice or palmette), *midrabah* (lit. bat, drum stick, possibly a stalk), *mirbaʿah* (lit. staff, piece of wood for lifting, possibly another type of stalk), *qamḥah* (lit. wheat grain), *lamlīmāt* (cf. *mulamlam*, round, rounded and *mulamlimah*, elephant's tusk), *safaṭ* (lit. basket; scales, of fish), *ʿuqdah* (lit. knot) and *ẓahr al-qalabbaq* (lit. back of the tortoise, most probably the same as *ṣadr al-bāz*, i.e. falcon's breast in Ibn Bādīs)[24]. The typical cover design would consist of an interlace (*ḍirs*) with either a

circle (dā'irah) or four-, six- or eight-pointed medallion (khātim murabba', musaddas, muthamman) in the centre, although the centre could also be filled with a pattern of interlacings (hikāyat al-dirs). For small format codices (al-asfār al-mukhtasarah) the Egyptian style binding (al-tasfīr al-misrī), with a lawzah and 'ushar in the centre, is recommended. The decoration of the envelope flap could consist of a medallion surrounded by a tābūt (lit. chest, coffin; also top, half-top, of a ship, i.e. pentagonal frame) or a pattern of small tools. Between the border (turrah) and the tābūt, the area which is called hashw al-udhn, an 'ushar was placed. Whatever the decoration on the flap, it had to be symmetrical with the decoration on the upper cover. The principle of the interlace (dirs) says al-Ishbīlī, was the 'cutting and the cut' (al-qāti' wa-al-maqtū'), that is intersecting lines which form compartments (buyūt). The outer border (turrah) could consist of one or several frames (buyūt), created by fillets (turuq), and panels (buhūr). The compartments in the interlace were filled in with a variety of small tools such as a pallet (dirs), of a long and connecting variety (al-tawīl, al-silah), two types of takhīl (pallet-like implement for outlining), i.e. takhīl al-dirs and takhīl al-tawīl, a gouge, tress (dafrah) and a dot (nuqtah). The first frame (bayt) says al-Ishbīlī, should always be filled with chainwork (silsilah) and the number of frames could vary from one to five, depending on the format of the codex. Borders consiting of more than five frames were made mostly for large boxes/chests (al-tawābīt al-jāfīyah al-ajrām).

It is interesting to note that the iron tools were heated and cooled down in fresh water (al-mā' al-'adhb) because using water which was not fresh (al-mā' al-zu'āq, lit. unpotable, i.e. in most cases sea water) would damage them. Wax (sham') was also used for this purpose to give the tooling elegance. In order to add beauty and shine to the tooled covers, some binders used a variety of oily substances (duhn) extracted from safflower (misrah)[25], pulp of darnel (shahm al-marj), walnut (al-jawz), malva arborea (khubbāzā, khubāzā), eggs (al-bayd), and the like. Brazilwood (baqqam) was, however, sufficient for this purpose, adds al-Ishbīlī.

The final chapters deal with making clasps which consist of knobs (azirrah) and leather fasteners ('uran, lit. thongs), as well as sleeve-cases and boxes (aqribah). The main feature of a sleeve-case (qirāb makhrūz, i.e. stitched, sewn) was that it had two flaps (udhnān) and could therefore be opened on either side. Sleeve-cases for more than two volumes were rarely made. For works consisting of several volumes a box (qirāb mabnī, i.e. constructed) or wooden chest (tābūt) are recommended. Al-Ishbīlī describes the box as having ādhān. Because of the use of the plural form and not the dual, as in the case of qirāb makhrūz, one can assume that such a structure had more than two flaps. This would presuppose the existence of a portfolio.

However, it is not altogether clear what is meant by udhn in this context. It is likely that udhn signified a flange or edge flap and not only an envelope flap, which lay under the upper cover. This structure was built around a form (qālib), covered with basan (bitānah) and had what al-Ishbīlī refers to as lawz, which is most likely to be an element of the clasp. The lid does not seem to be mentioned in an explicit way. The ādhān could be made with one piece of leather for the whole structure or separately and the latter method, states al-Ishbīlī, was preferable.

The 'tips' (nukat) given at the end include: removal of hair from skins by means of wax, giving sharpness to pumice by immersing it in vinegar (khall), improving the quality of nashan by transferring it into another receptacle (ina') to eliminate excess moisture (fa-yajtadib al-ina' al-rutūbah) and removal of oily substances (zayt) from paper by placing on it hot gypsum (jiss) or flour (daqīq) or ground argil (tafl mashūq).

Al-Ishbīlī concludes:

'Among the flaws of binding are blistered doublures (batā'in), missing flap (udhn), narrow fore-edge flap (muqaddam), flat spine (qafan), irregular arrangement of quires (taswiyah), covering (kiswah) flash with the textblock (kitāb)[26], tooling (naqsh) charred, fillet or fillets (tarīq) in the flap not symmetrical with those on the upper cover (wajh al-kitāb), lack of smoothness in burnishing (dalk), uneven cut of the leather near the endband (habk), interlace (dirs) disjoined, one border (turrah) wider than the other and the medallion (dā'irah) lacking shape.'

As can be seen from the above brief analysis, the picture which emerges is proof of a highly developed craft. A craft which had its own technical vocabulary and was a reflection of the society and its preocupation with the written transmission of knowledge.

NOTES

[1] This title is thus recorded by 'Abbās al-'Azzāwī in his 'al-Khatt wa-mashāhīr al-khattātīn fī al-watan al-'Arabī', Sumer, 38, no. 1/2 (1982), p. 300. Al-'Azzāwī extracted this information from 'Fihris Dār al-Kutub al-Misrīyah' (volume 6, p. 142). The existence of this manuscript in Dār al-Kutub is also attested to by 'Īsā Iskandar al-Ma'lūf in his 'Khazā'in al-kutub al-'Arabīyah', Majallat al-Majma' al-'Ilmī al-'Arabī, volume 3 (1923), p. 145. The author of this work is not given but the title is recorded as 'Nazm tadbīr al-tasfīr fī sinā'at al-kutub'. Al-Ma'lūf says that the manuscript is housed in al-Maktabah al-Taymūrīyah. Despite numerous efforts a copy of this manuscript could not be obtained. It is interesting to note here that Ahmad ibn 'Ardūn (d.992/ 1584), the author of al-Lā'iq li-mu'allim al-wathā'iq, also composed a work on bookbinding in verse. A fragment of it is cited in al-Sufyānī's Sinā'at tasfīr al-kutub (see below, note 4) on p. 2. Furthermore, in the work of al-Ishbīlī there are references to two other compilations: a book by Nabīl ibn Nabīl al-Ru'aynī and 'al-Tadbīr fī sinā'at al-tasfīr' by an anonymous author (both works could not as yet be identified closer).

² 'Umdat al-kuttāb has been edited by 'Abd al-Sattār al-Ḥalwajī and 'Alī 'Abd al-Muḥsin Zakī in *Majallat Ma'had al-Makhṭūṭāt al-'Arabīyah* (volume 17 (1971) pp. 44-172) and translated by M. Levey in his 'Medieval Arabic bookmaking and its relation to early chemistry and pharmacology', *Transactions of the American Philosophical Society*, N.S. 52, pt. 4 (1962), pp.5-50. For the translation of the chapter on bookbinding see also G.K. Bosch, 'The staff of the scribes and the implements of the discerning, an excerpt', *Ars Orientalis*, 4 (1961), pp. 1-13. For the translation of the chapter on paper making see J. Karabacek, 'Neue Quellen zur Papiergeschichte', *Mittheilungen aus der Sammlung der Papyrus Erzherzog Rainer*, 4 (1888), pp. 84-90 and C.M. Briquet, 'Le papier arabe au moyen age et sa fabrication' in *Briquet's opuscula*, ed. E.J. Labarre (Hilversum, 1955), pp. 162-169. There exists also a Persian version of this work preserved in the India Office Library, London (see Y. Porter, 'Une traduction persane du traité de Ibn Bādīs, 'Umdat al-kuttāb', *Manuscrits du Moyen Orient, essais de codicologie et de paléographie*, Paris/Istanbul 1989.

³ *Kitāb al-taysīr fī ṣinā'at al-tasfīr*, ed. 'Abd Allāh Kannūn, *Revista del Instituto de Estudios Islamicos en Madrid* (= *Ṣaḥīfat Ma'had al-Dirāsāt al-Islāmīyah*), 7-8 (1959-60), pp.1-42, 197-199 (Spanish abstract).

⁴ *Ṣinā'at tasfīr al-kutub wa-ḥall al-dhahab* (= L'art de la dorure et de la reliure), ed. P. Ricard (Fez, 1919; Paris, 1925). English translation by M. Levey in *Transactions*, pp. 51-55. Both the work of Ibn Bādīs and al-Sufyānī have been quoted extensively in G.K. Bosch, J. Carswell and G. Petherbridge, *Islamic bindings and bookmaking, a catalogue of an exhibition* (Chicago, 1981), in the section on 'The materials, techniques and structures of Islamic bookmaking'.

⁵ See the introduction to *Kitāb al-taysīr*, quoting Ibn al-Qāḍī's *Jadhwat al-iqtibās*, as well as I'timād Yūsuf al-Quṣayrī, *Fann al-tajlīd 'inda al-Muslimīn* (Baghdad, 1979), p. 38. For the description of the 'Uthmanic codex see A. Dessus Lamare, 'Le muṣhaf de la mosquée de Cordoue et son mobilier mécanique', *Journal Asiatique*, 230 (1938), pp. 551-575.

⁶ See the preface to *Kitāb al-taysīr*.

⁷ The manuscript which served as the basis for the printed edition was discovered in al-Maktabah al-'Ammah, in Tetuan (Morocco).

⁸ It is interesting to note here two other words used for the envelope flap: *raddah*, like *marji'* conveying the idea of return (see Ibn Jamā'ah, *Tadhkirat al-sāmi' wa-al-mutakallim fī ādāb al-'ālim wa-al-muta'allim*, Hyderabad, 1353 A.H., p. 172) and *miqlab* (Turkish *mikleb*, lit. hoe, see D. Haldane, *Islamic bookbindings in the Victoria and Albert Museum*, London, 1983, p. 203).

⁹ Like *wajh al-kitāb*, which can mean an upper cover, front of the textblock, as well as face of a letter, *ṣadr al-kitāb*, depending on the context, can mean a preface or introductory lines of a letter. The word *wajh* (also *wajhah*) is also used for a page, not just the recto of a folio.

¹⁰ There seems to be some confusion in the work of Ibn Bādīs between the verbs *habaka, hazama* and *kharama*. The sentence on p.157 of the Arabic edition reads: *al-ḥabk anwā' fa-minhu fī mawḍi'ayn wa-ghayruhu ya'malu bi-ibratayn aw-thalāthah wa-ra'aytu lil-Rūm shay'an minhu*. This is a clear reference to endbanding and not to sewing of quires. A synonym of *ḥabk* is *ḥabkah* (Ibn Jamā'ah, *op. cit.* p. 170;

'Abd al-Bāsiṭ ibn Mūsā al-'Almawī, *al-Mu'īd fī adab al-mufīd wa-al-mustafīd*, ed. Aḥmad 'Ubayd, Damascus, 1349 A.H., p. 132). The word *kharz*, on the other hand, means sewing leather (see Ibn Sīdah, *Kitāb al-mukhaṣṣaṣ*, Cairo, 1316-21 A.H. pt. 10, p. 9 *al-kharz khiyāṭat al-adam*).

¹¹ The text reads *gharā* (sic) in two places.

¹² The text reads *jawāmi'*. However, on page 12, lin. 4 we find: *wa-thalāthat aqlām min al-'ūd makhrūṭah li-'amal al-majma'*. For *majma'* (pl. *majāmi'*) see R. Dozy, *Supplément aux dictionnaires arabes*, 3 ed., (Paris, 1967), vol.1, p. 217.

¹³ Originally *nakth* (?), corrected by the editor to *nukat*.

¹⁴ The dictionaries used for this study were in the first place the above mentioned *Supplément* of Dozy, as well as E. W. Lane, *Arabic-English lexicon* (Cambridge, Islamic Texts Society, 1984); A. de Biberstein Kazimirski, *Dictionnaire arabe-français*, (Paris, 1960), Hans Wehr, *A dictionary of modern written Arabic (Arabic-English)*, ed. J. Milton Cowan, 4th ed. (Wiesbaden, 1979) and Martin Hinds and El-Said Badawi, *A Dictionary of Egyptian Arabic. Arabic-English* (Beirut, 1986). Many other dictionaries were consulted but most of them did not add more than could be extracted from the ones enumerated above.

¹⁵ Ibn Sīdah (*op. cit.*, pt. 13, p.8) gives a definition of *muṣhaf* as containing folios (*ṣuhuf*) enclosed between two covers (*al-jāmi' lil-ṣuhuf al-maktūbah bayna al-daffatayn*). For the meaning of the word *rab'ah* (copy of the Qur'ān; box, chest) see my 'The ancient *Sijill* of Qayrawān', *MELA Notes*, no. 46 (1989), pp. 27-28.

16. The word *sifr* (from the Hebrew *sefer*) as recorded in the *Sijill* of Qayrawān means a non-Qur'anic codex bound in pasteboards. Furthermore, in all its occurences in the *Sijill* the writing surface is not given or is given as paper. Parchment is not mentioned, whereas in the case of *daftar* both paper and parchment occur as textblocks (see preceding reference).

¹⁷ For *darmak* (Spanish *adargama*) see Dozy, vol.1, p.41. The word *ibrijmah* is probably the same as *ibrishmah* or *parishmah* signifying according to Dozy glue (vol. 1, p. 2 and 72). Cf. also the word *abrah*, white bread (Dozy, vol.1, p. 2.). For comparison with other bookbinding adhesives see G. Bosch et al., *Islamic bindings*, pp.50-51.

¹⁸ *Kaykataj* is a corruption of *kabīkaj* (see my 'The use of 'kabīkaj' in Arabic manuscripts', *Manuscripts of the Middle East*, 1, 1986, pp. 49-53 and James W. Pollock, 'Kabi:kaj to book pouches: library preservation magic and technique in Syria of the 1880's and the 1980's West', *MELA Notes*, no.44 (1988), pp. 8-10.

¹⁹ Only a small number of bookbinder's tools bearing the same names are found in the work of Ibn Bādīs and al-Sufyānī. For comparison see G. Bosch, 'Staff of the scribes', pp. 2-5 and *Islamic bindings*, pp.41-45. Ibn Sīdah in his *Kitāb al-mukhaṣṣaṣ* (pt. 4, pp. 100-111) has a section on different types of leather (*julūd*). We find here definitions of *dalaka* and *ḥatta*. Ibn Sīdah, quoting Khalīl al-Farāhīdī and Ibn Durayd respectively, says that *dalaka* means to soak and rub leather and *ḥatta* is a synonym of *dalaka*. Furthermore, *miḥatt* is a piece of wood used for smoothing leather or for tooling (*huwa khashabah yuṣqal bihā al-adīm aw yunqash*).

²⁰ Al-Sufyānī (*op. cit.*, p.9) instructs the binder to mark the middle leaf of the quire with the number five in the *ghubār* system (*al-khamsah al-ghubārīyah*).

²¹ For a discussion on and illustrations of Islamic end-

bands see Monika Gast, 'A history of endbands, based on the study by Karl Jackel', *The New bookbinder*, 3 (1983), pp. 54-56 and Jane Greenfield, *Headbands, how to work them* (New Haven, 1986), pp. 6569.

[22] For the illustration of this kind of binding see G. Marçais and L. Poinssot, *Objets kairouanais, IXe au XIIIe siècles* (Tunis, 1948), p. 14 and T.C. Petersen, 'Early Islamic bookbindings and their Coptic relations', *Ars Orientalis*, 1 (1954), p. 44. See also my 'Sijill' (*op. cit.*). We still need extra evidence to prove conclusively that this type of binding really did exist.

[23] Vol.2, p. 1520 and vol. 1, p. 737, respectively.

[24] To our knowledge, the only study on bindings of the Almohad period has been carried out by Prosper Ricard. See his two articles: 'Reliures marocaines du XIIIe siècle, notes sur des spécimens d'époque et de tradition almohades', *Hespéris*, 17 (1933), pp. 109-127 and 'Sur un type de reliure des temps almohades', *Ars Islamica*, 1 (1934), pp. 74-79. Both articles contain illustrations of the original bindings and drawings of various individual elements of which the decoration was composed. Al-Ishbīlī gives us an extraordinary range of small tools for a vegetal design (*tawrīq*). It is difficult at this stage to work out with confidence their exact meanings. For a general study on the subject see E. Kühnel, *The Arabesque, meaning and transformation of an ornament*, transl. by R. Ettinghausen (Graz, n.d.).

[25] *Miṣr* means red clay (*al-ṭīn al-aḥmar*), hence *al-mumaṣṣar*, dyed with *miṣr*. *Miṣrah* is *'uṣfur* (safflower) (see Ahmad Taymūr Bāshā, *al-Mawsū'ah al-Taymūrīyah min kunūz al-'Arab fī al-lughah wa-al-fann wa-al-adab*, Cairo, 1961, p. 164).

[26] The exact wording is '*wa-minhā an takūn al-kiswah mu'tadilah ma'a al-kitāb*'. This appears to be contrary to what really is one of the characteristics of Islamic bindings.

GLOSSARY OF TECHNICAL TERMS USED IN *KITĀB AL-TAYSĪR*

adāh (pl. *adawāt*), tool, implement
afsintīn, absinthe, wormwood
'alqam, colocynth
arz, cedar
baḥr (pl. *buḥūr*), cartouche; panel
baqqam, brazilwood
bashr, paring
bāṭin (pl. *bawāṭin*), inner side
bāṭin al-sifr (*al-kitāb*), inner cover
bayd, eggs
bayt (pl. *buyūt*), compartment in interlacing; frame
biṭānah (pl. *baṭā'in*), lining; doublure; basan
ḍābiṭ (pl. *ḍawābiṭ*), compass
ḍafrah, gouge
dā'irah (pl. *dawā'ir*), circle; circular stamp serving as a centrepiece or medallion
daqīq aḥmar, brown (?) flour
darmak, quality flour, farina
dirs (pl. *aḍrās*), pallet; interlace
duhn, oil, grease
ghirā' (pl. *aghriyah*), paste, adhesive
   al-ghirā' al-mashūb, paste prepared by cooking the main ingredient with the infusion of absinthe, colocynth or aloe
ghishā' (pl. *aghshiyah*), case; cover(ing)

ḥabk (pl. *aḥbāk*), endbanding; endband (headband)
   al-ḥabk al-dalī, trellis-like endband
   al-ḥabk al-muḍalla', chevron endband
   al-ḥabk al-shaṭranjī, chess board-like endband
ḥadīd (pl. *hadā'id*), piece of metal; small tool for tooling
ḥajar al-burkān, pumice
ḥajar al-misann, whetstone
ḥarīr, silk thread
ḥashw al-udhn, area between *ṭurrah* and *ṭābūt*
ḥikāyat al-dirs, pattern of interlacings
ibrah, needle
ibrijmah (*ibrishmah*), flour, farina
iḍbārah (pl. *aḍābīr*), number of gatherings; textblock
ifsantīn, see *afsintīn*
inā', receptical, pot
ishfā, awl, punch
jawz, walnut
jild (pl. *julūd*), leather
jirm (pl. *ajrām*), size, format
jiṣṣ, gypsum, plaster
kāghad, paper
kaykataj, word used as invocation against worms
khafīf, thick needle (?) (referred to by its opposite)
khall, vinegar
khātim (pl. *khawātīm*), stamp
   khātim murabba', square stamp, medallion
   khātim musaddas, hexagonal stamp, medallion
   khātim muthamman, octagonal stamp, medallion
khayṭ (pl. *khuyūṭ*), thread
khazz, silk
khirqah, cloth
khubbāzā, malva arborea
kiswah, covering of the boards
kitāb (pl. *kutub*), paper codex; textblock
   al-kitāb al-mukarras, codex consisting of quires
kurah min khashab, wooden ball used as a burnisher
kurrāsah (pl. *karārīs*), gathering, quire
lawḥ, wooden board
lawz, part of a clasp (?)
lawzah (pl. *lawzāt*), almond-shaped medallion (mandorla)
lamlīmah, small tool resembling an elephant's tusk (?)
mā', water
   al-mā' al-'adhb, fresh water
   al-mā' al-zu'āq, unpotable water
maftūl, leather thong for endbanding
mā'ūn (pl. *mawā'īn*), bookbinder's tool, implement
majma' (pl. *majāmī'*), box for implements
malasah (?), polisher
marj, type of darnel
miḍlaf, chisel (?)
midlak, burnisher for doublures
miḍrabah, stalk (?)
miḥaṭṭ, tracer
mijwāb, cutter for gold leaf
milzam (pl. *malāzim*), press
mimlasah, plane-like instrument
minshār, saw
miqaddah, crescent-shaped trimming knife
miqrāḍ, shears
miqṭa', instrument for fixing and removing decoration from covers
mirba'ah, stalk ?
misann see *ḥajar al-misann*

mish'ār, tendril (?)

mishṭab, duster, whisk (?)

miṣqalah, polisher

miṣrah, safflower

misṭarah (pl. *masāṭīr*), ruler, straight edge; rulings on the page

mithqab, drill for making holes in boards when endbanding

miṭraqah, mallet

mu'allaqah (pl. *mu'allaqāt*), piece of parchment used for lining the spine

muqaddam, fore-edge; fore-edge flap

musaffir, binder

muṣhaf (pl. *maṣāḥif*), parchment codex; textblock

   al-muṣhaf al-mulawwaḥ, parchment codex bound in wooden boards

   al-muṣhaf al-sifrī, paper codex bound in paste-boards

nashan, wheat starch

naqsh, tooling; engraving

nuqṭah, dot

qafan (pl. *aqfiyah*), spine, back

   qafan muqabbab, round back (spine)

   qafan musaṭṭah, flat back (spine)

qalam (pl. *aqlām*), piece of wood for making boxes for tools

qālib (pl. *qawālib*), form; format

qamḥah, tool resembling a wheat grain

qānūn, trapezium-like instrument for creating compartments

qarṭabūn, square (instrument)

al-qāṭi' wa-al-maqṭū', 'the cutting and the cut', principle of interlace (*dirs*)

qirāb (pl. *aqribah*), sleeve-case; box

   al-qirāb al-mabnī, case/box built around a form

   al-qirāb al-makhrūz, sewn case

qubṭāl (pl. *qabāṭil*), ruler, straight edge

rab'ah (pl. *raba'āt*), copy of the Qur'an; box, chest

rāji' (pl. *rawāji'*), strip of leather for lining the spine

raqq, parchment

ra's (pl. *ru'ūs*), head

   ra's al-kitāb, head of the book

   ra's al-misṭarah, top line of the page

rukhāmah, marble slab

rukn (pl. *arkān*), corner; corner-piece

ruq'ah, piece of leather

ṣabir (*ṣabr*), aloe

ṣadr al-kitāb, fore-edge; fore-edge flap

ṣafaṭ, tool resembling a basket (?)

ṣafīḥah, slab for tooling

shaḥm al-marj, pulp of darnel

sham', wax

shidq (pl. *ashdāq*), cover; casing

sifr (pl. *asfār*), paper codex; textblock; volume

sikkīn, trimming knife

ṣilah, small connecting tool (cf. *al-ṭawīl*)

silsilah, pattern of interlace (chainwork) used in a frame (*bayt*)

sulfah, soft leather

ṭābi' (pl. *ṭawābi'*), small tool for tooling

ṭābūt (pl. *ṭawābīt*), box; chest; pentagonal frame

tabyīt, creating compartments and frames

tadbīr, assembling textblock

ta'dīl, aligning quires

ṭafl, argil, potter's clay

taḥbīk, endbanding with silk thread

takhfīḍ, shaving, trimming

takhīl, pallet-like implement for outlining

takht, wooden pressing boards

takhzīm, sewing

ṭāqah (pl. *ṭāqāt*), sheet of paper

taqbīb, rounding the spine

taqfiyah, backing

ṭarīq (pl. *ṭuruq*), fillet

tarkīb, mounting leather

tasfīr, binding

   al-tasfīr al-miṣrī, Egyptian binding characterised by having a mandorla (*lawzah*) as central decoration

tashbīk, endbanding with an ordinary thread (*khayṭ*)

taswiyah, aligning quires; trimming, shaving

taṭrīq, pounding the spine with a mallet

ṭawīl, small, long pallet (cf. *al-ṣilah*)

thaqīl see *al-khafīf*

ṭu'mah, calice, palmette (?)

ṭurrah (pl. *ṭurar*), margin; border; egde; turn-in

udhn (pl. *ādhān*), flap, envelope flap

'uqdah, knot (tool)

'urwah (pl. *'uran*), thong, leather fastener (part of a clasp)

'ushar, stamp with vegetal design; tool used for the application of gold

wajh (pl. *wujūh*), face, outer side

   wajh al-kitāb, outer cover; front of the textblock

waraqah, leaf (folio); vine leaf

za'farān, saffron

zahr al-qalabbaq, tool resembling the back (carapace) of a tortoise

zamm, thong for tying up a book

zawj (pl. *azwāj*), bi-folio, conjugate leaf

zayt, oil

zirr (pl. *azirrah*), knob (part of a clasp)