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How to Erase Writing According to Recipes from the Arab World: Textual Analysis of Premodern Technical Recipes

Abstract: This study examines how the erasure of writing is technically described in premodern Arabic literature, situating these practices within their historical, codicological, and literary contexts. Focusing on durability and stability – two key aspects of textual transmission – it explores how erasure techniques were recorded and transmitted across various literary genres, including chancery manuals, bookmaking treatises, and handbooks on craftsmanship and entertainment. The study also investigates intertextual correspondences and technical variants in recipe compilations, revealing the fluidity of these textual traditions. Ultimately, this research sheds light on the interconnectedness of different literary genres and the broader intellectual engagement with the manipulation of natural elements across diverse fields of knowledge.

1 Introduction: Durability and stability of the written texts

In a society traditionally grounded in the oral transmission of knowledge, such as the Arabo-Islamic one, writing became deeply entrenched and developed in close connection with physically preserving the most important text in Islam and its fundamental pillar, the Qur'an. The primary concern among early Muslims was the potential loss of the Revelation with the death of the Prophet Muḥammad and his closest companions, many of whom perished during the first battles of territorial expansion. This issue, as perhaps is unnecessary to emphasise, was related not only to the content of the Qur'anic revelation itself but also to its form – namely, the language, with its prosodic structure (*sağ'*), and the order in which it was transmitted. This transmission was regarded as the Word of God, and from that moment on, it became the central normative text for every aspect of Muslim life. Islamic tradition recounts how, in the early years of Muḥammad's Revelation, his companions and followers began recording the Qur'anic message through private and partial annotations on various writing materials, whose selection was often determined by the circumstances at hand. These early records were not necessari-

ly intended to be permanent but rather served as aids to the Arabs' proverbial memory, which, in the first generations, was the primary authoritative means of textual preservation. The defective nature of the Arabic writing system, the absence of diacritical marks, and the interferences of spoken Arabic with its many regional peculiarities, during the territorial expansion of the Islamic caliphate, contributed to the proliferation of textual variants in the effort to preserve the Qur'an in written form. According to the tradition, it was only with the third caliph, 'Utmān ibn 'Affān, between 650 and 656, that an official version of the text was established, accompanied by an order to destroy all other circulating versions. Nevertheless, these parallel versions continued to spread, and, as a result, the official version of the Qur'an was established with a degree of tolerance for different readings, or *qirā'āt*.¹

This brief excursus on the transmission of the Qur'anic text aims to highlight how this event, in addition to marking the foundational moment of Islam, also serves as a paradigm for a mode of knowledge transmission that has become deeply ingrained in the tradition. It reflects the dual channels of expression and dissemination of the text – oral and written – already embedded in the ambivalence of the Arabic term *qur'ān* (which signifies both recitation and reading). This duality persists to this day, as the Qur'an continues to be not only a written text (no longer confined to manuscript books) but also a memorised text in Qur'anic schools and beyond. Moreover, it implicitly addresses certain crucial concerns that constitute central topics of the discussion presented in this paper. Specifically, two main issues emerge from the various phases leading to the canonisation of the Qur'anic text in its final form, highlighting two aspects of its transmission: durability, with particular reference to the media, including material supports, through which the text was conveyed; and fixity or stability, referring to the text's adherence to the original Revelation, which, however, was first received and then communicated orally. It is also noteworthy that, according to Islamic tradition, the written dimension of the Revelation already coexisted with its oral counterpart, as it is believed to be preserved on a celestial tablet.² These concerns – namely, the duration of a text across time and space and the stability of its original content and form – alongside the coexistence of oral and written transmission modes

¹ As a general reference on the different aspects of the transmission of the Qur'an, see Tottoli 2021, 157–188, with a comprehensive bibliography, and particularly Nasser 2013 and Déroche 2019. On the canonisation of the Qur'an, see also Nasser 2020 and Halaseh 2024. For a detailed discussion on the multistage process of Qur'anic orthography stabilisation, which began as early as the fifth century, see van Putten 2023.

² Tottoli 2021, 225–229, § 4.2.2.

were by no means limited to the Qur'an or other normative textual traditions, such as *ḥadīṭ* collections (the normative traditions related to the Prophet Muḥammad), which typically begin with the chain of their transmitters. On the contrary, these concerns quickly extended to all textual production, encompassing the various literary genres of Arabo-Islamic literature. For a long time, the very modalities of knowledge transmission, including the copying of manuscripts, were based on a complex system of certifications that also involved oral auditions, alongside text collation with its antigraph and, at times, other witnesses. These various stages provided opportunities for scribes and copyists, or later readers, to modify the written texts, leaving – or sometimes trying not to leave – visible traces of their interventions in erasing and rewriting on the same support.³

Thus, in the early centuries of Islam, a period in which both script and scribal practices developed rapidly and writings proliferated alongside the techniques and crafts related to book production, authors confronted these crucial aspects and engaged with these two themes in various ways and at different levels. This study seeks to introduce Arabic sources that convey these procedures from a technical perspective, situating them within their historical, codicological, and literary contexts while shedding light on specific aspects of their transmission. It is coordinated with the contribution of Claudia Colini and colleagues in this volume, which focuses on replicating a selection of these procedures and analysing the results obtained, taking into account the crucial textual variants in their transmission that have been here identified.

The following sections highlight the two fundamental concepts – durability and stability – that underpin writing practices and their relation to erasure techniques, as well as their close connection to the foundational written monument of Islam, the Qur'an, plus other normative texts and beyond. In particular, Section 2 examines how the concept of 'durability', referring to writing supports and inks, is addressed in technical treatises on bookmaking and in *adab* literature (erudite prose on administration and etiquette). It explores the various ways this concept is approached and manifests in copying, didactic, and ritual practices, as well as its particular significance in contexts of entertainment and deception. The concept of 'stability' is addressed in Section 3, which illustrates two main trends for textual modification and erasure, as described in Mamluk chancery manuals. Section 4 provides an overview of erasure procedures transmitted in technical recipe collections, categorised according to erasure methods, ink and support types, or their

³ On the modalities and places of knowledge transmission in premodern Arabo-Islamic context, see Eche 1967; Pedersen 1984; Berkey 1992; Messick 1993; Chamberlain 1994; Atiyeh (ed.) 1995; Capezzone 1998; Hirschler 2012; Behrens-Abouseif 2019.

contexts of use. Finally, Section 5 examines the transmission dynamics of these textual units and their fluid tradition, as represented in Appendix 1, through three case studies. Each case study highlights textual and/or technical variants identified through an intertextual analysis, illustrated in Appendix 2.

2 The durability of writing supports and inks

General advice on bookmaking and scribal practices, along with more specific instructions on text compilation and copying, can be found in various genres from the ninth century CE onwards. These include works on *ḥadīṭ* transmission, chancery treatises, and more encyclopaedic *adab* literature, all of which address the material issue of durability, either directly or indirectly.⁴ Only a few works, specifically focused on craftsmanship, offer more detailed and practical insights into the subject. These works, spanning geographically from Yemen to al-Andalus and dating from the tenth to the fifteenth centuries CE, cover a wide range of crafts, including bookmaking and its related manufactures, revealing rather complex and fluid transmissions. While it is possible to establish a philological lineage for some of the textual units (namely, the recipes) found in the treatises, the proliferation of *loci similes* across different traditions – and sometimes even within the same tradition – reflects multiple possible levels in the generation of variants. In certain cases, textual variants amount to mere reformulations of procedures or lexical updates; occasionally, however, they correspond to technical modifications in the procedures or ingredients, either as intentional updates introduced by knowledgeable scribes or compilers or, in other instances, as the result of simple palaeographical misreadings.⁵

The most ancient among these works is *Zīnat al-kataba* (*The Ornament of the Scribes*), by the renowned physician and alchemist Abū Bakr Muḥammad b. Za-

4 On Arabic sources on these different subjects, see Gacek 2004. On *adab* literature, see Ghersetti 2020, with extensive bibliography.

5 Editions and translations of selected sources on inks are in Raggetti 2016; Raggetti 2019; Raggetti 2021a. A comprehensive study on the philological relations between the technical sources on inks and their literary dimension is in Fani 2020; Fani 2021; Fani 2023 (with Italian translation of the sources). From this point onwards, the recipes contained in the technical treatises presented below will be identified by an alphanumeric code corresponding to the initials of the author's name and the recipe number, as drawn from – or inferred on the basis of – the textual division found in the relevant critical editions. Where applicable, the code corresponds to that already adopted in Fani 2023. For the recipes concerning ink removal and their corresponding codes, see Appendix 1 in this chapter.

kariyyā' al-Rāzī (d. 313 AH / 925 CE), a brief treatise primarily addressing ink production (both black and sympathetic) as well as stain removal (from clothing and writing surfaces).⁶ The following century saw the compilation of *Umdat al-kuttāb wa-ʿuddat dawī al-albāb* (*The Staff of the Scribes and Implements of the Wise Men*) – attributed to the Zirid governor of the historical region of Ifrīqiyyā (modern-day Tunisia and its surrounding regions) al-Muʿizz Ibn Bādīs al-Tamīmī al-Ṣanhāgī (d. 454 AH / 1062 CE). This is a longer compilation of recipes that includes coloured and metallic inks along with procedures for papermaking and bookbinding.⁷ This served as the main source for another treatise, *al-Muḥtaraʿ fī funūn min al-ṣunaʿ* (*The Findings on the Techniques of Craftsmanship*), attributed to a different governor. In this case, the alleged author is the Rasulid sultan of Yemen, al-Muẓaffar Yūsuf b. ʿUmar al-Ġassānī (d. 694 AH / 1294 CE), who sourced most of the recipes for ink production directly from the Tunisian treatise, offering a local variant for paper production and adding sections on weapons and fabric treatments (dyeing and bleaching).⁸ A coeval source from the opposite side of the *Dār al-Islām* is the compilation of recipes *Tuḥaf al-ḥawāṣṣ fī ṭaraf al-ḥawāṣṣ* (*The Gifts of the Wise Men on the Curiosities of the Occult Properties of Substances*), by Abū Bakr Muḥammad b. Muḥammad al-Qalalūsī (d. 707 AH / 1308 CE), secretary (*kātib*) and poet at the Nasrid court of Granada, who basically covered the same sections.⁹ These works have been studied primarily for their sections on papermaking, bookbinding, and ink production. It is in the last section that the authors, across the various textual traditions, express concern for the durability of the writing on the support. This is identified as one of the essential qualities a good ink should possess, alongside its sheen and colour intensity, particularly in the case of black inks.¹⁰ The sources also recall the concern for durability by referring to the possible damage caused by an unbalanced mixture of ingredients in preparations of iron-gall inks, which could lead to the support oxidising and, in the worst cases, completely degrading.¹¹

However, different sources, both textual and material, reveal a variety of intentions and sometimes suggest that duration was not necessarily the most desirable objective. Different perspectives on the durability and preservation of writings could

6 Zaki 2011; al-Rāzī, *Zīnat al-katāba*, ed. al-Qārī 2011; Fani 2023, 61–75.

7 Ibn Bādīs, *Umdat al-kuttāb*, ed. al-Ḥalwaḡī and Zaki 1971 (English translation in Levey 1962).

8 Al-Muẓaffar al-Ġassānī, *al-Muḥtaraʿ fī funūn*, ed. Ṣāliḥiyya 1989; Fani 2023, 76–116.

9 Al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-ʿAbbādī 2007; Fani 2023, 192–222.

10 See, for example, the recipe by Abū Bakr Muḥammad b. Zakariyyā' al-Rāzī for an ink 'that cannot be deleted and whose traces cannot be removed', transmitted also by later authors (al-Rāzī, *Zīnat al-katāba*, ed. al-Qārī 2011, 222–223, no. 6; Fani 2021, 123–130; Fani 2023, 66–67, R IV).

11 Fani 2023, 36–38.

be shaped by various factors, such as the cost or difficulty of obtaining resources, particularly writing materials like papyrus and parchment, which were expensive or scarce. This difference in priority is evident, for instance, in the admonitions attributed to Caliph 'Umar II (r. 99–101 AH / 717–720 CE), who urged the careful use of papyrus in administrative centres, as reported by the renowned secretary of the Mamluk chancery in Cairo, Aḥmad b. 'Alī al-Qalqašandī (756–821 AH / 1355–1418 CE).¹² Chanceries and administrations highly valued this material, as it was believed that writing inscribed on it could not be erased without leaving visible traces on the surface. Nonetheless, the caliphal administrations were not opposed to reusing papyri, a choice driven by material costs. This concern for economy is further corroborated by the common practice of filling the entire writing surface with inscriptions in every direction, added at different stages.¹³ Moreover, for centuries, a method was known in Egypt – one of the primary centres of production – for washing papyrus and restoring its original appearance by fading the traces of previous writings, thereby allowing it to be reused *ex novo*.¹⁴

Other evidence supports the need for ephemeral writing in specific contexts of use, such as the didactic one. The erasable wooden tablet (*lawḥ*, pl. *alwāḥ*) was indeed widely used across the Islamic world as a fundamental tool for teaching basic literacy in primary-level Qur'anic schools. During the learning process, the *lawḥ* often functions as a precursor to more permanent materials, such as parchment and paper: students write on it, memorise the content, and wash off the writing at lesson's end.¹⁵ While new forms of knowledge transmission have largely supplanted this pedagogical practice in most parts of the Islamic world, it continues to be widely employed in Sub-Saharan West Africa, as documented in Andrea Brigaglia's study,¹⁶ which highlights its initiatory function and its ritual dimension as a symbolic re-enactment of the Revelation itself.

In the thirteenth-century technical treatise compiled by the *kātib* al-Qalalūsī, one section refers to preparing clay crayons for teaching (*'al-ṭīn allādī yu'allamu bihi'*), which could be obtained either from single substances or by mixing different ones.¹⁷ According to the description, the products are made from powdered or

12 Al-Qalqašandī, *Ṣubḥ al-a'šā*, 1914–1928, vol. 3, 49.

13 Déroche and Sagaria Rossi 2012, 41.

14 Rāḡib 1990, 22. For a study of this practice on Greek papyri dating from the third century BCE to the ninth century CE, see Schmidt 2009. On reusing papyrus as a palimpsest, see also Elena Hertel's contribution to the present volume.

15 Ware 2014, on the region of Senegambia.

16 Brigaglia 2017.

17 Al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-'Abbādī 2007, 37–38; the description of the clay crayon is included in a chapter dedicated to the wad (*liqa*) to be soaked in the inkwell, the sawdust used to

extracted pigments, mixed with melted gum arabic, and dried to form small disks or pastilles (*qaraṣa*). The ingredients are both mineral and vegetal – different types of ochre as well as plant-derived dyeing substances – which result in light-coloured pastes. Even though the source does not explicitly mention the surface on which the *qaraṣa* are intended to be used, it is quite clear that the recipes refer to preparing a kind of chalk or crayon for erasable writing, as this is the pedagogical intent explicitly mentioned in the procedure's title. These crayons could have easily been used by teachers on various surfaces – such as walls – and not necessarily on wooden tablets.

Erasable writing practices are also employed in rituals, during which specialists inscribe esoteric formulas, invocation and doxologies, or Qur'anic passages on 'talismanic' wooden tablets, or different supports, which are then washed off, and the resulting liquid consumed by the petitioner, thereby absorbing its power. These practices continue to be in use today across various regions of the Dār al-Islām, reflecting a persistent tradition that transcends time and geography.¹⁸ These practices clearly represent the entanglement between the oral and written dimensions of the Qur'anic message mentioned above, as well as the close connection to its material expression, which materialises not only in ritual contexts but also in other spheres of everyday life, such as the medical and social domains.¹⁹ The written sources tend to provide limited information regarding the materiality of these practices, such as the coating of the tablets, if any, or the type of ink used. However, this could be easily justified by the esoteric character of these rituals, which likely entailed a more selective path for their transmission. A singular reference to an ink that should not be fixed (*lā yaṭbutu*) on the wooden tablet (*lawḥ*) – possibly alluding to its use in ritual contexts – occurs in a brief section of the same al-Qalalūsī's treatise devoted to practical recommendations for scribes, ranging from insect deterrents to anti-fermentative agents for ink, and the most appropriate types of containers according to ink composition. This ink is produced by increasing the quantity of sugar (also mentioned in the same section as an anticoagulant), which would have likely enhanced its taste for the person imbibing it.²⁰

dry the ink, and certain preparations with which the handwriting is coated to preserve or enhance its appearance. See Appendix 3 in this chapter.

¹⁸ El-Tom 1985; Nieber 2024; on early debates over the ingestion of the Qur'an see Zadeh 2009, 461–466.

¹⁹ Nieber 2024, 53, n. 1.

²⁰ Al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-'Abbādī 2007, 26; see also Fani 2023, 207 (Q 1.22). For similar practices where different additives are mentioned see Coulon 2022, 238–239 (rosewater, orange blossom water), Zadeh 2009, 464 (saffron).

In the technical sources mentioned above, a specific class of ink is related to the idea of durability in a particular way. Among the category of sympathetic inks, which in the sources are defined through a periphrasis as a way to ‘enclose secrets into books’ (*‘taḍmīn/waḍ’ al-asrār fī al-kutub’*), most are intended to be visible only after a physicochemical treatment, for example, heating, or after interaction with specific substances. In this case, the concept of durability relates strictly to a different need, namely that of visibility *on demand*. A cluster of recipes related to this ink type appears to have enjoyed significant popularity in the Arabo-Islamic context, as traces of them – whether individual recipes or an entire set – can be found across a wide range of textual traditions pertaining to different fields. These include the aforementioned technical treatises (both codicological and more encyclopaedic in nature),²¹ among which the one compiled by al-Rāzī presents the earliest set of recipes, which appear with textual or procedural variants or both in contemporary and later sources. Among them is the manual for the *kuttāb* by Ibrāhīm b. Muḥammad al-Šaybānī (*fl.* ninth century CE), titled *al-Risālat al-‘aḍrā’* (*The Virgin Epistle*), dating from the second half of the ninth century CE,²² and the almost contemporary *adab* work *al-‘Iqd al-farīd* (*The Unique Necklace*), by the Cordovan Aḥmad b. Muḥammad Ibn ‘Abd Rabbih (246–328 AH / 860–940 CE), which presents a selection from al-Rāzī’s recipes after quotations from the lexicographer and philologist Abū Ḥātim Sahl al-Siġistānī (d. 248 AH / 869 CE).²³ The same procedures, sometimes accompanied by more extravagant ones, are also found beyond manuals on craftsmanship and chancery, in unexpected literary genres, such as works produced by street entertainers and charlatans. These include the compilation of instructions for entertaining and amazing the public *al-Ḥiyāl al-bābiliyya li-l-ḥizāna al-kāmilīyya* (*The Babylonian Stratagems for al-Kāmil’s Treasure*) by the courtier at the Ayyubid court al-Ḥasan b. Muḥammad al-Iskandarī al-Qurašī (*fl.* 640 AH / 1243 CE), a courtier at the Ayyubid court; *‘Uyūn al-ḥaqā’iq wa-īdāḥ al-ṭarā’iq* (*The Best of True Facts and the Explanations of Their Ways*) by the alchemist Abū al-Qāsim b. Aḥmad b. Muḥammad al-‘Irāqī (*fl.* thirteenth century CE); and *Zahr al-basātīn fī ‘ilm al-mašātīn* (*The Garden’s Flowers on the Knowledge*

21 Al-Rāzī, *Zīnat al-katāba*, ed. al-Qārī 2011, 225 (nos 25–30), 226–227 (nos 40, 42–44); Ibn Bādīs, *‘Umdat al-kuttāb*, ed. al-Ḥalwaḡī and Zakī 1971, 135–137; al-Muẓaffar al-Ġassānī, *al-Muḥtara’ fī funūn*, ed. Šāliḥiyya 1989, 93–94; al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-‘Abbādī 2007, 36; see also Fani 2023, 71–72 (R XIX–XXIII), 74–75 (R XXX, XXXII–XXXIV), 109–110 (MM V.1–4), 217–218 (Q VII.1–5); Levey 1962, 35b–36a.

22 Ibn al-Mudabbir, *al-Risālat al-‘aḍrā’*, ed. Mubārak 1931, 28–29. Note that the work is erroneously attributed by its editor to its dedicatee.

23 Ibn ‘Abd Rabbih, *al-‘Iqd al-farīd*, ed. al-‘Aryān 1953, 242. The recipes are also quoted in al-Siġistānī’s biography reported in Ibn Khallikān, *Wafayāt al-a’yān*, ed. ‘Abbās 1968–1977, vol. 2, 432.

of *Sleight-of-Hand*) by Muḥammad b. Abī Bakr al-Zarḥūrī al-Miṣrī (fl. fifteenth century CE), a performer and illusionist.²⁴ In these contexts, the recipes' intended use diverges from the *adab*'s educational objectives in the field of diplomacy and chancery, entailing a more spectacular and captivating purpose. The entire set of recipes in al-Rāzī's compilation as well as the later ones includes various types of sympathetic writing: with milk, which becomes visible on papyrus upon contact with hot ash; with vitriol, which appears in contact with gallnut extract or vice versa (the reaction at the basis of iron-gall inks, but in two steps); with softened gum ammoniac or incense on papyrus, parchment, or paper, which becomes visible upon contact with ash or after fumigation with incense or bran; with dissolved ammonium salt, visible after incense fumigation; and with onion juice, revealed after fumigation with a lamp. It also covers writing visible at night, but not by day, made with the bile of a turtle or of a specific type of fish (*nuṭāb*); one visible only while the carbon-based ink (*midād*), mixed with pigeon blood, remains wet; and another type with the same effect, made from the burned fruit of colocynth. In *al-Iqd al-farīd*, Abū Ḥatīm al-Siġistānī describes to the author 'sublime things (*ašyā' ḡalīla*) for changing [the aspect] of the letters, which are achievable by everyone'.²⁵ Among these, one of the recipes he mentions features a significant variant compared to the same procedure reported in other sources: the description of iron-gall ink made in two steps does not mention gallnuts. Instead, the effect, if any, relies on the reaction between the solution of 'white vitriol' with 'vitriol'. This variant is likely due to an error in the transmission, caused by the specular phrasing (homeoteleuton) of the original textual unit, in which the procedure is also presented with the ingredients inverted.²⁶

For all these recipes, it is possible to imagine various contexts of use, such as diplomatic or private secret epistolary exchanges, as suggested by the title of the

24 Al-Iskandarī, *al-Ḥiyal al-bābiliyya*, ed. Qārī 2018, 173–184; al-Zarḥūrī, *Zahr al-basātin*, ed. al-Qārī 2012, 137–142 (nos 111–124); see also Raggetti 2021b, 160–161 (§ 6.1.6), 165–168 (§§ 6.3.1–14). An edition and translation of this section of al-ʿIrāqī's *ʿUyūn al-ḥaqaʿiq* is in Raggetti 2021a, 178–182 and Raggetti 2021b, 163–164 (§§ 6.2.1–8).

25 Ibn ʿAbd Rabbih, *al-Iqd al-farīd*, ed. al-ʿAryān 1953, 242.

26 As a matter of fact, the black precipitate, namely the ink, is more easily – though not exclusively – obtained with iron sulphate, which the sources commonly refer to as 'green vitriol' due to the colour of its crystals and its solution, both of which turn yellow upon oxidation. The reference to the colour 'white' should likely be understood here as the transparency of the green vitriol solution, which should not be visible on the writing surface. Indeed, in the inverted version of the recipe, the colour is not specified. The recipe is translated in Pedersen 1984, 68, with no reference to the error.

textual section and, in a few cases, within the lines of the procedures.²⁷ Moreover, they all share the production of marvellous and astounding effects – or promise as much – particularly in contexts where the underlying chemical or physical principles are not explicitly conceptualised, despite being empirically observed and exploited. This, as mentioned above, made these procedures ideal material to include in textual compilations of tricks, deceptions, and astonishing effects.²⁸

3 Stability in the textual transmission

As for the concept of stability of the text – that is, its adherence to a reference model and the modifications it undergoes during the various stages of its transmission – authors since the earliest centuries of Islam have approached the issue from two distinct perspectives. Each perspective broadly aligns with a specific field of textual production, with different codicological outcomes:

(1) In the first case, the modification and cancellation of the writing remain visible: a practice that can be defined as *transparent*, typically described in *adab* manuals on chancery for compiling documents and texts.

(2) In the other case, the modifications – or at least the original layers of writing – are hidden: a practice that can be defined as *non-transparent*, primarily described in technical manuals.²⁹

The first case is mainly mentioned by authors who developed what could be considered a primitive or archaic philological approach, even though limited to the *collatio*, which started to be adopted with the first compilations of *ḥadīṭ* collec-

27 Al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011, 225; al-Muẓaffar al-Ġassānī, *al-Muḥtaraʿ fī funūn*, ed. Ṣāliḥiyya 1989, 93; see also Fani 2023, 71–72 (R XX), 110 (MM V.3). Ibn ʿAbd Rabbih, *al-Iqd al-farīd*, ed. al-ʿAryān 1953, 242: recipe for the iron-gall ink in two steps, in which the reaction to make the writing visible has to be triggered once the message has been delivered (*ʿidā waṣāla ilā al-maktūb ilayhī*).

28 But see also the explicit aim to amaze (*ʿin aradta an tuġriba ʿalā aḥādʿ*) expressed for one of the same recipes in the work of the *kātib* al-Qalālūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-ʿAbbādī 2007, 36; see also Fani 2023, 217 (Q VII.2).

29 Certainly, these two different practices should not be regarded as exclusive to the two groups of actors mentioned in their respective descriptions, nor should it be assumed that these groups cannot equally make use of both practices, even within the same manuscript. Moreover, the two professions could certainly overlap. However, these practices can be seen as broad definitions that encompass the different approaches involved in modifying texts throughout the various stages of their production, transmission, and use.

tions, and *fiqh* ('jurisprudence') manuals.³⁰ This approach materialised and manifested in the manuscripts' folios and was later codified in administrative manuals or chancery manuals, especially those produced during the Mamluk age. This textual genre offers a wealth of information on writing, writing implements, calligraphy, and paper formats. The most comprehensive chapter concerning the modification, or copying and correction of manuscript texts, and in particular *ḥadīṭ* compilations, is transmitted by Badr al-Dīn Muḥammad b. Muḥammad al-Ġazzī (d. 984 AH / 1577 CE) in his manual, *al-Durr al-naḍīd fī ādāb al-muḥīd wa-l-mustaḥīd* (*The String of Pearls in the Etiquette of the Teacher and the Learner*),³¹ which was abridged by his contemporary 'Abd al-Bāsiṭ b. Mūsā al-'Almawī (d. 981 AH / 1573 CE).³² According to this work, the correction process (*taṣḥīḥ*, *īṣlāḥ*) involves the visible registration of textual variants, based on a comparison with other copies (*mu'āraḍa*, *muqābala*, *mubālaḡa*; namely, 'collation') or on the basis of the recitation or audition (*qira'a*, *samā'*) of the text in the presence of an authority witness to the transmission process, who could sometimes be the author himself.³³ Non-conformity with the reference model – that is, the presence of scribal errors or different *lectiones* – had to be annotated with a specific repertoire of marks and abbreviations, described using a specialised terminology, such as *tahriḥ* and *al-taqdīm wa-l-ta'ḥīr* (metathesis); *saqṭa*, *naqṣ*, *tahriḡ*, and *laḡaḡ* (omissions); *ziyāda* (addition); *taṣḥīf* (errors resulting from incorrect letter-pointing or vocalisation);

30 In addition to the Arabic sources specifically addressing these genres (Gacek 1989; Gacek 2007; Rosenthal 1947), other studies draw on evidence observed in various manuscript traditions. For example, Florian Sobieroj offers an analysis of the textual variance of Arabic didactic poems compiled between the eleventh and the seventeenth centuries CE, attempting to categorise variance in this specific literary genre, and provides an excursus of the means of text stabilisation (Sobieroj 2016, 11–52). For a discussion on the variance of the Qur'anic text, see Small 2011.

31 Al-Ġazzī, *al-Durr al-naḍīd*, ed. al-Miṣrī 2006; Gacek 1989. Along with his study and translation, Gacek published the images of a manuscript witness that was collated in the presence of the author himself (plates XXb–XXXIb).

32 Al-'Almawī, *al-Mu'īd fī adab al-muḥīd*, ed. al-'Aṭiyya 2004. A translation and discussion of the relevant chapter is in Rosenthal 1947, 7–18. Franz Rosenthal specifies that there is another work, composed by Muḥammad b. Ibrāhīm Ibn Ġamā'a in 672 AH / 1273 CE, *Taqḍīrat al-sāmī' wa-l-mutakallīm fī adab al-'ālim wa-l-mu't'allīm*, which is almost identical to al-'Almawī's work. Only Ibn Ġamā'a cites as a source a work by al-Ḥaṭīb al-Baġdādī (392–463 AH / 1002–1071 CE), now lost, which may have been the common source for both. For the relevant translation of Ibn Ġamā'a's work see Canova 2012, 240–249.

33 *Stricto sensu*, the word *muqābala* is not exactly synonymous with *mu'āraḍa*, as it does not necessarily entail an audition in the presence of an *auctoritas* ('*al-qirā'a 'alā al-ṣayḥ'*); rather, it can rely solely on another copy (or copies) of the text (Gacek 1989, 56, n. 52; see also Gacek 2009, s.vv. 'Collation', 'Collation notes and marks').

and *bayān* (restoring a cacographic error). Likewise, the textual passages to be deleted or substituted (*ḍarb*, ‘cancellation’; *badal*, ‘substitution’) had to be marked. All of this remains visible on the manuscripts, attesting to the reliability of the copy, underpinned by this work of variant sifting.³⁴

In general, the sources that address the technicalities of knowledge transmission dissuade copyists from using alternative methods of erasure and deletion, arguing that what was erased may turn out to be correct in another recension.³⁵ Nonetheless, the authors describe some of these methods for deleting superfluous words as:

- *kašt* (‘erasing’), *bašr* (‘scraping’), or *ḥakk* (‘rubbing’) with a penknife, preferable only for very small portions, such as diacritical dots or vowels; and
- *maḥū*, namely the ‘deletion’ or ‘taking off’ of the ink by other means, such as a cloth eraser (*ḥirqa*) or by licking off still moist ink from the writing surface.³⁶

In the Arabo-Islamic milieu, references to such practices for obliterating writing from the page also can be found in sources of different kinds as mere incidental information. Take, for example, the *Kitāb al-Tanbīh wa al-išrāf* (*The Book of Notification and Verification*) by the tenth-century historian and geographer Abū al-Ḥasan ‘Alī b. al-Ḥusayn al-Mas‘ūdī (283–346 AH / 896–957 CE): in his description of the Mount Etna eruption, he mentions the floating, white, and light stone, which he describes as the material used to scrape writing from paper and parchment (*‘yuhakku bihi al-kitāba min al-dafātir wa-l-ruḥūq wa-ḡayr dālik’*), which can be easily identified as pumice (in the text, *qaysūrā* or *f*n*s*k*).³⁷

³⁴ The specific terminology and marks of the transmission and correction processes are detailed in Rosenthal 1947, 7–18; Gacek 1989; Gacek 2007; Gacek 2009, s.vv. ‘Scribal errors’, ‘Cacography’, ‘Metathesis’, ‘Omissions and insertions’, ‘Textual corrections’, ‘Cancellation’; Canova 2012, 247.

³⁵ Canova 2012, 249. Moreover, the word *ṣaḥḥa* (‘to be correct’) can be added to the text to restore its original version when a deletion or substitution is mistakenly made (Gacek 1989, 57; Gacek 2007, 225–227; Gacek 2009, s.v. ‘Cancellation’; Canova 2012, 248).

³⁶ The last should have been quite a common practice, according to the saying attributed to Ibrāhīm al-Naḥāī (d. 96 AH / 714 CE) and quoted by al-Ġazzī: ‘One of the traits of manliness is the ink on a man’s clothes and lips’ (Gacek 1989, 58–59). Such indications, especially related to carbon-based ink, are well attested in Latin sources as well. In first-century BCE Spain, for example, Martial provided instructions for the removal of carbon-based ink from writing supports with a sponge, which sometimes occurred even with rain alone. A century later, Suetonius wrote that the operation could also be performed with the tongue. In this regard, the reflections of Mūsā Ibn Maymūn (known in the West as Maimonides, twelfth century) are also interesting: he addresses the issue of using such inks in liturgical writings, where a certain durability over time was required (Zerdoun Bat-Yehouda 1983, 85–86, 111–116).

³⁷ Al-Mas‘ūdī, *al-Tanbīh wa-l-išrāf*, ed. al-Šawī 1938, 53.

Many other methods for completely deleting or effacing writing from different supports, through mechanical or chemical actions or both, are transmitted by the aforementioned technical manuals on bookmaking. I will focus on them in a moment, after further elaborating the occurrences of these practices, based on material evidence that can be contextualised according to two motivational frameworks. Some cases of adjustment were driven by the intention of the scribe who compiled or copied a text, or by a reader who obtained a copy accomplished by someone else, to conform to a reference model (textual, auditory, or mental). This was a way to rectify his own, or someone else's, involuntary scribal errors (or presumed errors), by concealing them and, when possible, rewriting on the same portion of the support. This situation mirrors the ones described by al-Ġazzī, but with a final different choice, namely, deleting the previous writing on the support and, in some cases, replacing it with a different inscription considered the correct one, or the better choice. Other cases of complete deletion could also be motivated by doctrinal, ideological, linguistic, and even deceitful intents. The existence of very early Qur'anic palimpsests, for example, can be understood in the context of a normative action promoted by religious authorities, aimed at the destruction of all non-orthodox variants of the sacred text, as evoked in the aforementioned tradition.³⁸ Their production is well attested by material evidence, and the spread of this practice related to the canonisation of the Qur'an is recorded in early and authoritative sources, such as the *Kitāb al-Fihrist*, the famous compendium of the knowledge and literature of tenth-century Islam compiled by the bibliographer Ibn al-Nadīm (d. c. 385 AH / 998 CE), who stated:

I saw a certain number of Qur'anic codices (*muṣḥaf*), that the copyists remember as Ibn Mas'ūd's codices. It is not possible to find two identical copies among them, and most of them were copied on rewritten parchment (*wa-aktaruhā fi raqq kaṭīr al-nusah*).³⁹

³⁸ Qur'anic palimpsests on parchment are primarily studied by codicologists, palaeographers, and philologists to recover the inferior, often invisible, layers of the text and examine their relationship with the superior layer. They are crucial documents in the history of the transmission of the Qur'anic text, and their significance often leads to intense debate. Notable examples include the famous Ṣan'ā' Palimpsest (Sadeghi and Goudarzi 2012; Hilali 2017; Cellard 2021) and the more recently identified Birmingham Palimpsest from the Mingana collection (University of Birmingham, Cadbury Research Library, Islamic Arabic 1572a – parchment dated by radiocarbon c. 568–645 CE), which is still awaiting comprehensive investigation. See the related 'Mingana-Lewis Palimpsest' project: <<https://www.lib.cam.ac.uk/research/digital-humanities/case-studies/mingana-lewis-palimpsest-project>>, accessed on 13 January 2025.

³⁹ Ibn al-Nadīm, *Kitāb al-Fihrist*, ed. Flügel 1871–1872, vol. 1, 26.

These two mentioned practices differentiate in the aim of either conforming to or deviating from a model, but they are similar in the intention to obliterate what was originally written on the page. As previously mentioned, these interventions could be carried out by the copyist of the manuscript or by other actors involved in the history of the codex, such as owners, occasional readers, and others. The varying degree of involvement of such individuals in a manuscript's history is reflected in their erasing actions, which can affect the main text (*matn*) itself and its *textual filiations* – whether interlinear or in the margins – such as comments, glosses, and scholia of any kind (*ḥāšīya*, *šarḥ*, *tafsīr*), as well as any paratextual elements related to the specific copy, including colophons, dedications, ownership statements, reading notes, and the like.

4 Technical procedures for ink removal from writing supports

The recipes detailing ink removal procedures have long been neglected, much like most of the literature in which they are found, namely, technical manuals on bookmaking, at least until recent years.

Before delving into a detailed analysis of some of the recipes, an overview of the possible categories of the procedures described will be useful, highlighting the aspects that differentiate them. The features and intended uses of the final products are in some cases explicitly indicated in the title of each textual unit; in others, they can be inferred from the procedural content itself. Taken together, titles and descriptive sections provide information regarding:

- the overarching purpose of the procedure, often expressed through verbs such as *maḥū* ('deletion, erasure'), *qal'* ('removal, weed out'), and *azāla* ('to make disappear, to remove), as well as more specific verbs related to the type of intervention;
- the type of ink to be removed – either *midād* ('carbon-based ink') or *ḥibr* ('iron-gall ink') – although some recipes refer more broadly to *al-kitāba* ('the writing');

- the writing support to be treated, which may include papyrus (*qirtās*), parchment (*raqq*, *daftar*, *muṣḥaf*), paper (*kāḡad*), or, in one case, leather (*ḡild*);⁴⁰
- the extent of the treated surface, ranging from small sections (intended, for instance, to correct mistakes – *ḥaṭa*, vowels marks, or diacritics) to the complete erasure of the surface (as in the case of palimpsests – *ṭirs*);
- the nature of the intervention itself, whether mechanical (generally employed for localised erasure) or chemical. These interventions could be implemented through a variety of methods, as reflected both in the diversity of verbs employed and in the range of substances used:
 - a sticky substance – such as wax, incense, or other gum resins – made into a paste (*aḡana*), then shaped into small portions (*ballūt*, ‘acorns’; *qaraṣ*, ‘pastilles’; *bunduq*, ‘hazelnuts’; *fatīla*, ‘wick’) and dried out (*ḡaffa*) to collect the ink by sticking it (*laqaṭa*);
 - a whitish plaster to cover the ink (*ṭalā*, *lāṭa*);
 - an abrasive substance to rub or scrape off (*ḥakka*, ‘araka’, *qaššara*) or a vegetal sponge (*lifā*) or a wool cloth (*šūfa*) to wipe off (*masaḥa*) the ink;
 - a liquid substance to wash off the ink (*ḡasala*);
 - a liquid substance to be sprinkled on the writing surface (*ḍarra*), completing the procedure with an abrasive substance.

4.1 Sticky substances for papyrus

As for the writing supports to be treated, it is interesting to note how the sources trace the codicological development of Arabic manuscript production, particularly the shift from one writing support to another.⁴¹ Papyrus (*qirtās*), in fact, is only mentioned in the oldest compilation of recipes that included this genre of procedures, namely al-Rāzī’s *Zīnat al-kataba*.⁴²

[R X] – Deletion of writing (*maḥū*) from the [sheets of] papyrus (*qarāṭis*) so that it will not be visible. Glean (*laqaṭa*) it [by sticking it] with wax or chewed frankincense (*kundūr*) or olibanum (*lubān*), or with pounded gum ammoniac. Drop a drop of water on it and grad-

⁴⁰ These terms, notwithstanding their polysemy, are not the only ones used to refer to these writing supports; however, the others, such as *waraq* (‘paper’) and *bardī* (‘papyrus’), do not appear in the recipes for ink removal (Gacek 2001, s.vv.; Gacek 2008, s.vv.).

⁴¹ For an overview on the subject, see Déroche and Sagaria Rossi 2012, 39–72.

⁴² On the specific definition of the different writing supports by al-Rāzī, see Fani 2023, 237–238.

ually pick up [the ink]; each time you pick up a bit of it, check the other side. [The writing deletion] will not be visible.⁴³

[R XXVIII] – [Removing using a] plaster (*lawṭ*) the *midād* from the [sheets of] papyrus (*qarāṭīs*). Take some wax, soften it, and apply it generously over the writing on the [sheets of] papyrus.⁴⁴

Although the two recipes seem quite similar in terms of ingredients, all characterised by their sticky nature, they seem to describe two different methods of ink deletion. In the first, the ink is literally picked off the writing surface, while, in the second, it is only covered or plastered over. On the other hand, the preposition *min* ('from') in the latter's title suggests that the removal of the writing medium from the support is also implied in the second method. This aspect, combined with the sticky substance as the main ingredient, indicates that both procedures aim at removing the medium by sticking to and pulling it off, and not only at covering it with a plaster; indeed, the carbon-based ink can be more easily removed from a less porous support, such as papyrus, as it does not penetrate the fibres.⁴⁵ The difference between the two procedures can thus be identified in the more focused and delicate action of the first (*qalīlan, šay'an min*) and the stronger action of the second, as suggested by the verb 'to apply generously over' (*ḡamura*) with reference to the plastering. From this perspective, it is likely that the recipe omits the final step, which would involve detaching the wax from the papyrus, 'picking up' or 'sticking off' the ink from the support, but in a single motion. Another possible interpretation is that the procedure does not include reusing or rewriting on the surface (which would not be feasible upon a wax plaster) but more simply covers and conceals the writing. The yellowish colour of the wax would have resembled the paper colour, thereby enhancing the camouflaging effect. In any case, the verb *laqaṭa* ('to glean, to pick up') and *lāṭa* ('to plaster, to coat'), along with its verbal name *lawṭ*, both referring to the ink or writing, are paleographically quite similar in Arabic script; this resemblance may have led to a textual variant during transmission, potentially accounting for the conflation or ambiguity in the technical distinction between the two procedures. A later Andalusian version of this recipe, which adds gum arabic to the wax, is presented by al-Qalalūsī (Q XI.5) and is more explicit about applying the preparation – specifically, to stick the ink off, in this

43 Al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011, 224 (no. 15); see also Fani 2023, 68–69.

44 Al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011, 226 (no. 38); see also Fani 2023, 74.

45 See Section 5 of Colini et al.'s contribution to the present volume.

case from paper (*kāḡad*).⁴⁶ The first-mentioned recipe, by al-Rāzī (R X), was also repropounded in later compilations, where its procedural description appears with minor textual variants; in these versions, the writing support to be treated is also changed.⁴⁷

4.2 Palimpsests

Some older technical sources report procedures for writing erasure. One such procedure for the complete removal of iron-gall ink (*ḥibr*) from leather and parchment (*al-ḡulūd wa-l-maṣāḥif*)⁴⁸ involves washing these writing supports with the juice of oleander (*diflā*) leaves and barley grains. This method is included in the short treatise on stain removal, titled *Ta'liq fī qal' al-āṭār min al-ṭiyāb* (*Remarks on Stain Removal from Clothes*) attributed – though likely spuriously – to Iṣḥāq Ibn Ḥunayn (d. 297 AH / 910 CE), son of the famous physician Ḥunayn Ibn Iṣḥāq, both renowned for their translations of scientific works during the Abbasid Period.⁴⁹

⁴⁶ In this case, a direct descent from al-Rāzī's text is not certain, given the addition of an ingredient (*ṣamaḡ*, 'gum'), a procedural step (the making of small filaments), and a different lexical choice (*mūm* instead of *ṣam'* for 'wax'). However, it should be noted that on other occasions the Andalusian author explicitly sources from the collection of recipes transmitted under al-Rāzī's name (Fani 2023, 240; see also n. 52 below).

⁴⁷ Ibn Bādīs, *Umdat al-kuttāb*, ed. al-Ḥalwaḡī and Zakī 1971, 139 (IB IX.7), where the procedure is meant to remove iron-gall ink from paper (*kāḡad*); al-Muẓaffar al-Ḡassānī, *al-Muḥṭara' fī funūn*, ed. Ṣāliḥiyya 1989, 96 (MM V.11), where the treatment is referred to parchment ('*min al-dafāṭir wa-l-ruqūq'*), as mentioned in the previous recipe (MM V.10); see also Fani 2023, 112. The only later source that quotes the same recipe, maintaining the reference to papyrus, is al-Iskandarī: al-Iskandarī, *al-Ḥiyāl al-bābiliyya*, ed. Qārī 2018, 181 (no. 209); see also Raggetti 2021b, 161 (§ 6.1.7[a]).

⁴⁸ The polysemy of the term *muṣḥaf* (pl. *maṣāḥif*) refers both to individual sheets of parchment and to entire codices, particularly Qur'anic codices bound as a single volume, made of parchment (Gacek 2001, s.v. 'Muṣḥaf'). Regarding the juxtaposition of leather and parchment in this recipe, it is interesting to note that their preliminary treatments result in different chemical properties for the two supports. Leather typically becomes acidic due to the tanning agents, while parchment is generally alkaline because of the lime used in its production. Therefore, the two agents mentioned in the recipe – oleander juice and barley grains – would likely interact differently with these two types of writing supports, influencing the efficacy of the erasure process.

⁴⁹ GAL S, vol. 1, 369. The text in question is known in three witnesses and largely reproduces the work *Risāla fī qal' al-āṭār* (*Short Treatise on Stain Removal*) compiled by Ya'qūb Ibn Iṣḥāq al-Kindī (d. c. 256 AH / 870 CE). Giuseppe Celentano edited the *Ta'liq fī qal' al-āṭār* as an appendix to the edition and translation of al-Kindī's work, which does not report any recipe for ink deletion from writing supports (Celentano 1985, 191–197).

[IḤ 4] – Washing off (*ḡasl*) the *ḥibr* from leathers and parchments: take fresh oleander leaves and squeeze out their abundant juice, along with barley grains in one half of its amount; then lade it with some water in the same amount and wash the sheets with it. Then place them between two tablets, with some sand underneath until they dry out.

A similar version of this recipe is found in *Zīnat al-kataba* by al-Rāzī. In this method, the parchment sheets are soaked and stacked atop one another for a day and a night. Afterwards, their surfaces are rubbed with a vegetal sponge (*lifā*), and finally the parchments are stacked again after being sprinkled with barley flour.⁵⁰ Indeed, it is noteworthy that the title of this procedure, as well as of Ibn Ḥunayn's recipe, refers to the action of 'washing off' the ink, but in the case of al-Rāzī's work, the more specific term *ṭurūs* ('palimpsests'; sing. *ṭirs*) is used, possibly due to the more professional orientation of al-Rāzī's work towards the class of secretaries and scribes and the context of the book arts. In al-Rāzī's *Zīnat al-kataba*, there are indeed three additional recipes concerning the washing off (*ḡasala*) of iron-gall ink (*ḥibr*) from sheets or quires of parchment (*dafātir*), which are not transmitted by later sources:

[R XXVIa] – Washing off the *ḥibr* from the [sheets of] parchment and the clothes. Wash [the parchment] with the sour juice of the citron, or, if you wish, with some white alkali (*qalī*),⁵¹ pouring some citron juice on it, until it softens; with this preparation rub the spot where the writing is placed until it starts [to fade]; then rub it with a *lifā* and the parchment will turn out white. [...]

[R XXVIc] – You can also wash it with vinegar, potash (*uṣṣān*), and citron juice.

[R XXXI] – Removal of the *ḥibr* from the [sheets of] parchment. Wash them with whey and, if you wish, with a solution of alkali.⁵²

⁵⁰ Al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011, 226b (no. 37); see also Fani 2023, 74 (R XXVII).

⁵¹ The name indicates an alkaline soluble substance obtained from calcinated ashes of different halophilic plants. I prefer to give here the English translation, as it refers directly to one of the original sources, namely *Salsola kali*, L. (another notable plant for the purpose was *Salsola soda*, L.). The resulting product of the calcination is primarily a mixture of sodium carbonate and potassium carbonate, and it cannot be excluded that the two terms were used interchangeably, even within the same sources.

⁵² Al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011, 226a–b (nos 33, 35, 41); see also Fani 2023, 73–75. The only exception regarding the later transmission is, also in this case, al-Qalalūsī (Q XI.4b), who merges the two recipes, mentioning the same procedure of R XXVIc but substituting the potash (*uṣṣān*) with a different alkaline substance, namely the white alkali mentioned in R XXVIa (al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-'Abbādī 2007, 41; see also Fani 2023, 221). Compare with n. 51 above.

Regarding palimpsests, *Firdaws al-ḥikma* (*The Paradise of Wisdom*) stands out for its antiquity and the originality of the ink-removal method it describes. This exceptional medical encyclopaedia by ‘Alī ibn Sahl Rabbān al-Ṭabarī (c. 838–870 CE), mentor of al-Rāzī, outlines a procedure within a chapter devoted to the properties of plants that interact with each other and erase one another’s traces.⁵³

[ṬB 1] – If you want to delete the [quires of] parchment (*dafātir*) inscribed with *ḥibr*, delete it using the [spare] heavy parts of safflower (*‘usfur*) that dyers throw away, or with chard (*salq*) cooking water.⁵⁴

The eleventh-century treatise on book-production crafts ascribed to Ibn Bādīs offers a unique procedure for palimpsests too:

[IB IX.4] – Another description. Dampen the parchment with water, then scatter lime (*kils*) over it, without stinting, and rub: this will eliminate the writing from the surface. If some [traces] of it remain, soak the parchment in wheat bran (*nuḥāla qamḥi*), salt, and water for two days or three: it will be cleaned and cleansed.⁵⁵

The recipe is not mentioned by the later sources, not even by the Yemeni treatise ascribed to al-Muẓaffar al-Ġassānī, who draws from the former for most of the other procedures, as with, for example, another recipe (MM V.6 ≈ IB IX.6) for iron-gall ink removal (*izāla*) from parchment that involves rubbing a paste of salt with a woollen cloth (*ṣūfa*) soaked in milk (*laban ḥalīb*) onto the writing.⁵⁶

⁵³ For an excursus of its content and its importance for the transmission of indirect traditions, see Raggetti 2020.

⁵⁴ The same recipe is included in al-Qalalūsī’s work (Q XI.4a), where the recipe shows a variant: *nuḥāla*, namely the ‘bran’ or ‘spear part’ of the safflower, instead of *itqāl* or *atqāl* (‘heavy part’ or ‘weights’), as it appears in the edition of *Firdaws al-ḥikma*. The Andalusian *locus similis* could doubtfully be the result of a palaeographical misreading and a *lectio faciliior*; nonetheless, if this was the case, the meaning would not be far from the *lectio difficilior*, the ‘spear part’ also being the one that mostly contributes to the ingredient’s weight (al-Ṭabarī, *Firdaws al-ḥikma*, ed. al-Ṣiddīqī 1928, 531; al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-‘Abbādī 2007, 41; see also Fani 2023, 221).

⁵⁵ Ibn Bādīs, *Umdat al-kuttāb*, ed. al-Ḥalwaḡī and Zakī 1971, 139. This recipe is not included in Martin Levey’s translation or in another edition of the same work (cf. Ibn Bādīs, *Umdat al-kuttāb*, ed. al-Harawī and Makkiyya 1989).

⁵⁶ The same recipe is also preserved in al-Qalalūsī’s treatise (Q XI.3); Ibn Bādīs, *Umdat al-kuttāb*, ed. al-Ḥalwaḡī and Zakī 1971, 139; al-Muẓaffar al-Ġassānī, *al-Muḥtara’ fī funūn*, ed. Ṣāliḥiyya 1989, 94; al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-‘Abbādī 2007, 41; see also Levey 1962, 37a; Fani 2023, 111, 220–221.

4.3 Erasing small portions of writing

Another of Ibn Bādīs's recipes (IB IX.3) is dedicated to removing iron-gall ink from a limited portion of parchment, rather than the entire sheet. This procedure, too, is unique to this work and is paired with another in the same treatise (IB IX.9), both employing the same treatment and application of the ingredients.⁵⁷ The first (IB IX.3) refers to the distillation (*taṣīd*) of lye (*mā' al-ġāsūl*) mixed with vinegar, or the distillation of onion juice (*mā' al-ūṣal*), as an alternative to soap water (*mā' al-ṣābūn*): the preparation must be applied over the writing to make it disappear. The second (IB IX.9) is for parchment and paper: one *raṭl* of *sabḥī* or *Andarānī* salt⁵⁸ is mixed with two *dirham* of water and distilled seven times; the result will be a white solution that must be applied over the inscription with the *qalam* (reed pen) to efface the ink. The recipes' more complex procedural passage – that is, distilling the ingredients – as compared to the other preparations is possibly the reason why they do not appear in later traditions. In fact, surprisingly, this practice is not even mentioned in al-Rāzī's treatise, where one would more naturally expect it to appear, him being an authority in the field of alchemy. This should not be necessarily read as a personal competence of the governor Ibn Bādīs: rather, it could be more easily explained by the marked compilatory nature of the treatise attributed to him, and by the fact that he, or whoever compiled it for him, could have accessed sources of different genres, including those more related to alchemy, possibly even in the very library of the governor.⁵⁹

4.4 The dark side of erasure

A common feature usually mentioned in the recipes is the discreet nature of the intervention: its invisibility on the writing surface. This requirement certainly could be informed by the scribe's aesthetic concerns, but, as mentioned above, in some cases it is possible to perceive intentions of a different kind. The ability to conceal alterations made to the writing surface is, in fact, fundamental to the use of sympathetic inks, which thus acquire a spectacular and astonishing dimension. However, this very characteristic can also serve less noble purposes, finding its

⁵⁷ Ibn Bādīs, *Umdat al-kuttāb*, ed. al-Ḥalwaḡī and Zakī 1971, 138, 140; translated with a few inaccuracies in Levey 1962, 36b, 37a.

⁵⁸ The first is salt in paste form, while the second refers to a crystalline salt, named after a town near Aleppo, possibly al-Andarīn, or Androna as it was known in Byzantine times (Ibn al-Bayṭār 1877, nos 2164, 2168).

⁵⁹ On the attribution of the treatise, see Fani 2023, 78–79.

raison d'être in secrecy and concealment, with deception as its ultimate goal. Among these practices, which are included in the same treatises, one can count, for example, a method for reading sealed documents without breaking the seals and a technique for making papyrus appear aged.⁶⁰ This particular dimension led to these very recipes being included in works dedicated to entertainment and deception, such as the aforementioned *al-Ḥiyal al-bābiliyya* by al-Iskandarī and *Zahr al-basātīn fī 'ilm al-mašātīn* by al-Zarḥūrī.⁶¹ A peculiar source is represented by the guide to unveiling frauds and tricks perpetrated by the so-called Banū Sāsān – the tribe, or, better, the guild, with which these popular tricksters are identified – or by other social groups: *al-Muḥtār fī kašf al-asrār* (*Anthology on the Unveiling of Secrets*) by the Damascene 'Abd al-Raḥīm b. 'Umar b. Abī Bakr Ġamal al-Dīn al-Ġawbarī (thirteenth century CE).⁶² This work provides a clearly delineated bureaucratic context in which technical strategies were employed to forge notarial documents. Among the procedures described is the selective erasure of legal terms and substantive content, while deliberately preserving the signatures of the witnesses, thereby maintaining the appearance of authenticity:

[ĠB XXII.2] – To do this, they take one part amber (*kārubā*), one part starch (*nišā'*), one part galbanum granules (*ḥubb al-qinna*), one part castor seed (*ḥubb al-ḥirwa'*), and one part cottonseeds (*ḥubb al-quṭn*). They fumigate the document with this, the writing is erased, and they write whatever they want.⁶³

[ĠB XXII.3] – Another example: they take one part each amber and basil seeds (*ḥubb al-bādarūġ*), pound the whole together, fumigate the document with it, and none of the writing is left. Wise up to these things!⁶⁴

These two examples – the first procedures presented by the author – are quite original recipes, both for the ingredients employed and for the peculiar lexical choices as compared with the other sources.

60 Al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011, 225, 226; al-Muẓaffar al-Ġassānī, *al-Muḥtara' fī funūn*, ed. Šāliḥiyya 1989, 96; see also Fani 2023, 71, 74, 113 (R XVIII, R XXIX, MM V.13). The procedure for reading the sealed documents also appears in chancery manuals, for example in Ibn al-Mudabbir, *al-Risālat al-aḍrā'*, ed. Mubārak 1931, 28–29.

61 Al-Iskandarī, *al-Ḥiyal al-bābiliyya*, ed. Qārī 2018, 181 (no. 209); al-Zarḥūrī, *Zahr al-basātīn*, ed. al-Qārī 2012, 142 (no. 125); see also Raggetti 2021b, 161 (§ 6.1.7), 168 (§ 6.3.15).

62 Raggetti 2021b, 52–57 and throughout; al-Jawbarī, *The Book of Charlatans*, ed. Dengler 2020.

63 Al-Jawbarī, *The Book of Charlatans*, ed. Dengler 2020, 326–327, § 22.3.

64 Al-Jawbarī, *The Book of Charlatans*, ed. Dengler 2020, 326–327, § 22.4.

5 Case studies: Technical variants in a fluid tradition

The two main concepts upon which this text focuses – durability and stability – have also influenced the reception of these textual materials, which have evidently succeeded in surviving through time and space, but, due to their peculiar structure in micro-textual units, bear the traces of very fluid traditions, which undermine the concept of textual stability and fixity. An intertextual analysis allows us to highlight the correspondences among the different traditions and to focus on a few case studies to gain a philological insight into the fluid tradition and the ways in which these works' transmission has performed. In fact, this analysis will highlight the (in)stability of specific recipes' transmission and the technical variants that intervene in their shift from one textual tradition to another.⁶⁵

5.1 Variants of the main ingredient

The first case study is a procedure aiming at the deletion, or more precisely the peeling off (*qaššara*), of iron-gall inks from parchment with an abrasive paste.⁶⁶ The procedure's various passages are quite consistent between the different traditions, apart from the main ingredient, which appears in different *lectiones* based on an evident palaeographical similarity in Arabic between the terms *qalī* ('alkali, sodium carbonate'; also in the variants *al-qalī* and *qalī^m*), *qalīmiyā* ('calamine, mill scale'), and *qinna* ('galbanum, gum resin of *Ferula gummosa* (L.)). The fact that al-Rāzī's treatise is the most ancient of the discussed sources discussed suggests the hypothesis that *al-qalī* is the 'original' ingredient of this recipe. Nonetheless, the fact that we know the work via a unique witness (and quite a late one) cannot rule out the possibility that *al-qalī* was a variant generated by the copyist of that specific witness, or earlier in the transmission of the text.⁶⁷ What we can say is that calamine, or mill scale (that is, the scoria of certain metals in fusion),⁶⁸ appears only in this occurrence and nowhere else in the different textual traditions on ink

⁶⁵ Appendix 1.

⁶⁶ Appendix 2.1.

⁶⁷ Manuscript Cairo, Dār al-Kutub, Mağāmi' Tal'aṭ 33 (al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011). For a description of the witness see Zaki 2011, 226–227; Fani 2023, 62–64.

⁶⁸ Kās 2010, vol. 1, 258–262; Ibn al-Bayṭār 1877, no. 1826.

erasure, or, more generally, on bookmaking. Thus, *al-qalī* can easily be a *lectio faciliior*.

The very fluid transmission of these recipe compilations is probably at the base of the duplication of the recipe (MM V.8, MM V.10) in the Yemeni treatise attributed to al-Muzaffar al-Ġassānī: it is in fact possible that he, or whoever compiled the work in his name, had access to different witnesses of Ibn Bādīs's treatise and that, based on a variant reading, duplicated the recipe with two different ingredients within his own compilation. After all, the galbanum – a gum resin – could work mechanically on the removal of the *hibr* to obtain the result; on the other hand, the alkali, with its high pH, could also interact chemically with the support. This example testifies to the possibility of an equally effective technical variant, intertwined with a textual misreading. It is nevertheless interesting to note that one of the sources – namely al-Ġawbarī, less specialised in book crafts – refers to employing the preparation differently, by blotting (*laṭaḥa*) the writing, or obscuring it, and not by wiping it off (*masaḥa*) as the others indicate.

5.2 A widely attested recipe

The second example is even more widespread, as it appears also in the works of illusionists and street performers, and it aims at the same goal as the previous one.⁶⁹ The preparation involves several ingredients, to be diluted with wine vinegar, made into a paste, shaped in small spheres and then dried to be rubbed on the writing. Among them, alum (*šabb*) and sulphur (*kibrīt*) – yellow or white – are common to all the sources; the alkali (*qalī*) is mentioned with its synonym 'alum of the safflower' (*šabb al-ʿuṣfur*) by some authors,⁷⁰ while it is absent in the similar recipes transmitted by al-Ġawbarī and al-Zarḥūrī; as in the previous example, al-Muzaffar al-Ġassānī substitutes *al-qalī* with *al-qinna*, but he also gives the alternative option of *šabb al-ʿuṣfur*, notwithstanding the different nature of the two ingredients. Al-Iskandarī is the only one who adds ammonium salt to the preparation. A further ingredient, which is absent in al-Iskandarī and al-Qalalūsī, offers another example of palaeographical variant in the other sources, as it appears as

⁶⁹ Appendix 2.2. Only al-Iskandarī mentions papyrus and paper along with parchment at the beginning and at the end of the recipe. The verbs used for the erasing (*qala'a*, *maḥā*) are quite common ones with no direct reference to a specific technique.

⁷⁰ Ibn al-Bayṭār 1877, no. 1828.

maşl (whey), *muql* (bdellium), and *başal* (onion); al-Ġawbarī, quite originally, substitutes this with gallnuts (*afş*).⁷¹

5.3 Same ingredient, different names

Finally, a peculiar recipe is presented by al-Rāzī and is included in the later compilations by Ibn Bādīs, al-Muẓaffar al-Ġassānī, and al-Ġawbarī.⁷² It describes a whitish paste to plaster over the writing and rewrite atop it once it is dried out. The writing support for applying this technique is paper in the two oldest sources, while it is less clear in the later ones. The ink to be removed is indicated as iron-gall ink (*ḥibr*) in the titles of the recipes – which possibly could have been added later – while two cases mention carbon-based ink (*midād*) within the lines of the procedure. The common ingredients are pounded and sifted white lead and melted gum arabic, with little variation in the procedure. It is interesting to note that Ibn Bādīs is the only source to use *bārūq* to indicate white lead, instead of *isfīdāğ*; he is also the only one who adds sulphur (*kibrīt*) to the two main ingredients. With the exception of al-Muẓaffar al-Ġassānī, usually quoting from the Tunisian treatise, the preparation is to be dried out in the shape of small spheres, melted when needed, daubed on the writing (the sources reference ‘mistakes’, a single ‘letter’, or ‘writing’ in general), and dried before rewriting over it.

6 Conclusions

Within the Arabo-Islamic context, as well as other linguistic and cultural environments, erasing script from writing surfaces (books, documents, and beyond) naturally developed in parallel with the establishment of written knowledge transmission. The act of writing, indeed, often requires correction, whether to rectify mistakes or to modify or remove texts that have lost their relevance or suitability, sometimes allowing repurposing of the entire writing surface. The various practices to effect it are closely linked to the concepts of material preservation of the text, namely the durability of the support and the medium used for

⁷¹ The same variants (*maşl*, *muql*) are found in a simpler version of the same recipe, with yellow sulphur, which is presented by three sources: al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011, 226 (no. 37); Ibn Bādīs, *ʿUmdat al-kuttāb*, ed. al-Ḥalwağī and Zakī 1971, 138 (IB IX.2); al-Muẓaffar al-Ġassānī, *al-Muḥtaraʾ fi funūn*, ed. Şāliḥiyya 1989, 95; see also Fani 2023, 74, 112 (R XXVI, MM V.9); Levey 1962, 36b.

⁷² Appendix 2.3.

writing, as well as textual stability and fixity, ensuring the text's conformity to a model throughout its creation, copying, and reading. These concerns emerged early on in Islam's history, coinciding with the need to preserve and fix the Qur'anic text and other normative writings, but soon expanding to encompass the entire textual production within this linguistic and cultural context.

Descriptions and instructions regarding these practices appear in early textual traditions across various fields of knowledge and literary genres, revealing two overarching tendencies: in the first, more philological in nature, erasures, variants, and corrections remain visible on the support, creating a sort of archaic critical apparatus to the text; in the second, more pragmatic and scribal, the previously recorded writing from the support is removed, sometimes to be replaced with another text, based on different considerations. These considerations may be purely aesthetic, but also linguistic, ideological, doctrinal, or even deceptive in intent. In some cases, the writing on the entire writing surface is completely removed, making the support available to accommodate a new text for didactic, ritual, or economic purposes. This latter practice is what occurred, for example, in the teaching of the Qur'anic text, in the performance of apotropaic rituals, or, finally, within the royal chanceries, where reusing writing materials was for economic reasons.

The ability to make writing disappear, reveal it, or alter its appearance under certain conditions (sympathetic inks) becomes a spectacular feature, employed by court artists and street performers to captivate audiences. The crucial part of the procedures was either concealed from the viewers or simply unknown to them, as they lacked familiarity with the natural laws – namely, the chemical and physical reactions – governing the interaction of the substances involved.

These procedures, along with those for removing iron-gall inks and carbon-based inks from various writing supports, are described in the form of recipes in works which reference diverse contexts of application. An intertextual comparison between the available sources reveals the textual variants in the recipes transmitted by different authors (*loci similes*) and identifies when these correspond to technical variants. This approach offers evidence of fluid textual traditions, highlighting the permeability of literary genres and the interest generated by the capacity to manipulate natural elements in various fields of knowledge.

Appendices

Appendix 1

The following chart shows the occurrences of *loci similes* in the different sources.

Ibn Ḥunayn Iraq, 9th c.	al-Ṭabarī Persia-Iraq, mid 9th c.	al-Rāzī Persia-Iraq, 9th–10th c.	Ibn Bādīs Ifriqiya, 11th c.	al-Ġawbarī Syria etc., 13th c.	al-Iskandarī Iraq, 13th c.	al-Muzaḥḥar al- Gassānī Yemen, 13th c.	al-Qalalūsī al-Andalus, 13th c.	al-Zarqūrī Egypt-Syria, 15th c.
IH 4								
	TB 1						Q XI.4a	
		R XXVIa						
		R XXVIb					Q XI.4b	
		R XXVIc	IB IX.2			MM V.9		
		R XXVII						
		R XXVIII					Q XI.5	
		R XXXI						
		R X	IB IX.7		IS 6.1.7a	MM V.11		
		R XI	IB IX.8	ĜB XXII.6		MM V.5	Q VIII	
		R XII	IB IX.1	ĜB XXII.5	IS 6.1.7b	MM V.7	Q XI.1	Z 6.3.15
		R XIII	IB IX.5	ĜB XX.4		MM V.10 ≈ V.8	Q XI.2	
			IB IX.6			MM V.6	Q XI.3	
			IB IX.4					
			IB IX.3					
			IB IX.9					
				ĜB XXII.2				
				ĜB XXII.3				

Appendix 2

The following charts offer a comparative textual analysis of selected *loci similes* identified in the sources and discussed in the paper.

Appendix 2.1

Loci similes describing a procedure for removing iron-gall inks from parchment with variants in its main ingredient.⁷³

R XIII	IB IX.5	ĜB XX.4	MM V.10	MM V.8	Q XI.2
On what scrapes off (<i>qaššara</i>) the <i>hibr</i> from quires (<i>daftar</i>) and scrolls (<i>raqq</i>) of parchment and the deletion of its traces.	Another kind is when the <i>hibr</i> is scraped off (<i>qaššara</i>) from quires and scrolls of parchment and its traces are deleted.	[Taking off the writing from the document (<i>maktūb</i>).] And among those procedures:	Another kind is when the <i>hibr</i> is scraped off from quires and scrolls of parchment and its traces are deleted.	[Description of the <i>hibr</i> deletion from the books (<i>kutub</i>) and the quires.] A similar one:	Ink removal (<i>qal'</i>) from books:
Take white alkali (<i>al-qalī</i>),	Take white mill scale (<i>qalīmiyā</i>),	They take whitened alkali (<i>qalī</i>)	Take white mill scale (<i>qalīmiyā</i>),	Take white galbanum (<i>qinna</i>),	Take white alkali (<i>qalī^m</i>)
crush it (<i>saḥaqa</i>)	crush it	and they crush it	crush it	crush it	crush it
and pour acid [juice] of citron on it until it becomes smooth;	with acid [juice] of citron;	with acid juice of citron until it becomes smooth;	and pour acid [juice] of citron;	with acid [juice] of citron until it becomes smooth;	and pour citron juice until it becomes smooth;
wipe off (<i>masaha</i>) with this the traces of the writing:	wipe off with it what you wish:	then they blot (<i>laṭaḥa</i>) the writing with it	then wipe off with it what you wish:	then wipe off with this the traces of the writing:	then wipe off with this the traces of the writing
		and they leave it to dry out;		leave it to dry out	and leave it to dry out;
it will be deleted (<i>maḥā</i>) and its traces will not be visible.	it will go away (<i>ḥaraḡa</i>).	it will delete its traces, and nothing will remain; and this is the best that I have unveiled.	its traces will go away.	and no traces will be visible on it.	it will be deleted, and its traces will not be visible on that spot.

73 Al-Rāzī, *Zinat al-kataba*, ed. al-Qārī 2011, 224b (no. 18); Ibn Bādīs, *ʿUmdat al-kuttāb*, ed. al-Ḥalwaḡī and Zakī 1971, 139; al-Jawbarī, *The Book of Charlatans*, ed. Dengler 2020, 326–327, § 22.5; al-Muẓaffar al-Ġassānī, *al-Muḥtaraʿ fī funūn*, ed. Šālīḥiyya 1989, 95; al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-ʿAbbādī 2007, 41; see also Fani 2023, 70 (R XIII), 111–112 (MM V.8, MM V.10), 220 (Q XI.2); Levey 1962, 36b–37a.

Appendix 2.2

Loci similes, attested in diverse textual genres, documenting a procedure for the removal of iron-gall inks from parchment or other supports by means of a dried abrasive paste.⁷⁴

R XII	IB IX.1	ĜB XXII.5	IS 6.1.7b	MM V.7	Q XI.1	Z 6.3.15
On what takes off (<i>qalā'a</i>) the <i>ḥibr</i> from the quires of parchment (<i>dafātīr</i>).	Production of what deletes (<i>maḥā</i>) the writing from quires and scrolls (<i>ruqūq</i>) of parchment.	[Taking off the writing from the document (<i>maktūb</i>).] Another example:	[Deletion of the <i>ḥibr</i> from parchment and papyri (<i>qarāṭīs</i>).]	Description of the <i>ḥibr</i> deletion from the books (<i>kutub</i>) and the quires.	Taking off the <i>ḥibr</i> from the parchment quires.	Description of a peculiar preparation to remove the <i>ḥibr</i> from parchment and other materials.
Take alum (<i>šabb</i>),	Take yellow Yemeni alum,	They take Yemeni alum,	If it is <i>ḥibr</i> , take alum,	Take yellow Yemeni alum,	Take Yemeni alum,	Take alum,
whey (<i>mašl</i>),	bdellium (<i>muql</i>),	gallnuts (<i>ḥubb al-'afṣ</i>),		bdellium,		onion (<i>baṣal</i>)
alkali (<i>al-qalī</i>),	alum of the safflower (<i>šabb al-'uṣfur</i>),		alkali,	galbanum (<i>qinna</i>), which can be substituted by alum of the safflower,	alum of the safflower,	
and white sulphur (<i>ki-brīt abyad</i>), each in the same amount;	and white sulphur, one part each;	and white sulphur, one part each,	and yellow sulphur (<i>ki-brīt aṣfar</i>), one part each,	and white sulphur, each in the same amount;	and white sulphur, one part each;	and sulphur in the same amount;
	pound (<i>daqqa</i>) smoothly;	and pound them smoothly.	then pound them smoothly.	pound smoothly;	pound vigorously;	crush (<i>saḥa-qa</i>) everything together,

74 Al-Rāzī, *Zinat al-kataba*, ed. al-Qārī 2011, 224b (no. 17); Ibn Bādīs, *Umdat al-kuttāb*, ed. al-Ḥalwaḡī and Zākī 1971, 138; al-Jawbarī, *The Book of Charlatans*, ed. Dengler 2020, 328, 329 (§ 22.6); al-Iskandarī, *al-Ḥiyal al-bābilīyya*, ed. Qārī 2018, 181 (no. 209); al-Muzaffar al-Ġassānī, *al-Muḥtara' fī funūn*, ed. Šālīhiyya 1989, 95; al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-'Abbādī 2007, 41; al-Zarḥūrī, *Zahr al-basātin*, ed. al-Qārī 2012, 142 (no. 125); see also Fani 2023, 69–70 (R XII), 111 (MM V.7), 220 (Q XI.1); Levey 1962, 36b; Raggetti 2021b, 161 (§ 6.1.7[b]), 168 (§ 6.3.15).

pour wine vinegar on the mixture and grind it till it becomes like egg yolk (<i>muḥḥ</i>),	pour wine vinegar on the mixture and grind it till it becomes like grease (<i>šahm</i>),	Then they pour wine vinegar and grind it till it becomes like an ointment (<i>marham</i>)	Pour wine vinegar, till it becomes like an ointment, then leave it to rest for one day till it dries off (<i>našifa</i>); when it becomes like a paste (<i>aḡīn</i>)	pour wine vinegar on the mixture and grind it smoothly,	pour wine vinegar on the mixture and grind it till it becomes like [the consistency of] the brain (<i>dimāḡ</i>).	and pour vinegar till it becomes like an ointment.
then make this into the shape of an acorn (<i>ballūṭa</i>).	then make this into the shape of an acorn.	which they then make into the shape of an acorn	make this into pieces (<i>ašyāf</i>)	then make this into the shape of acorns.	Then make it into the shape of pastilles	Then make this into the shape of acorns.
Make it dry out (<i>šaffafa</i>),		and make it dry out in the shade.	and leave it to dry out.	Make it dry out in the shade.	and make it dry out in the shade.	
			You must have added ammonium salt (<i>nušādir</i>) to it, and the alum must be the Yemeni one.			
then rub off (<i>ḥakka</i>) the <i>ḥibr</i> with it from the quires and scrolls (<i>ruqūq</i>) of parchment and from the leathers (<i>šulūd</i>).	Rub off what you wish with it, and you will see it white, <i>in šā' Allāh</i> .	They rub off with it the ink and what they wish from the quires, and the writing is deleted; it disappears, leaving no trace at all.	Rub with it the area where the <i>ḥibr</i> is – both on paper (<i>kāḡad</i>) and on other materials – and really its traces will disappear.	Rub (<i>dalaka</i>) with it the <i>ḥibr</i> from the quires and the scrolls.	Rub off the <i>ḥibr</i> with it wherever you wish to make it disappear.	Rub off the writing with it and this will disappear. This is a peculiar preparation, you have to learn it!

Appendix 2.3

Loci similes of a procedure describing a whitish paste used to cover existing writing and permit overwriting, featuring lexical variants related to its main ingredient.⁷⁵

R XI	IB IX.8	ĜB XXII.6	MM V.5	Q VIII.d
Deletion (<i>maḥū</i>) of the writing from paper (<i>kāḡad</i>) so that it will be rewritable, and the deletion will not be visible.	Another method for [<i>ḥibr</i>] deletion from paper.	[Taking off the writing from the document (<i>maktūb</i>).] Among the various methods they take off (<i>qala'a</i>) the writing from books:	As for what deletes the <i>ḥibr</i> from quires (<i>dafātīr</i>) [of parchment?].	As for the coating (<i>tilā'</i>) overlaying the writing when someone dislikes it:
Take one <i>dirham</i> of white lead (<i>isfidāḡ raṣāṣī</i>) and sieve it with a piece of silk;	Take white lead (<i>bārūq</i>),	they take white lead (<i>isfidāḡ al-raṣāṣ</i>)	Take one part of pure and clear gum arabic	Take the fixed weight of white lead (<i>bayāḡ abyāḡ</i>) and pound it thoroughly, then sieve it with a piece of silk.
then take the same weight of gum arabic cleaned from its wood and dust;	gum arabic,	and gum arabic, one part each.	and one part of white lead (<i>isfidāḡ</i>)	Take the same weight of gum purified from [the residues] of its wood and its pot (<i>qidr</i>),
add a bit of water to it, but do not exaggerate with it: add it just until it melts,			then melt (<i>balla</i>) the gum with water till it liquefied (<i>inhalla</i>) and dissolved (<i>dāba</i>)	moisten it with a little water without exaggerating, and let it melt.
	and sulphur (<i>kib-rīṭ</i>), one part each;			
then knead it with the white lead that you had sifted finely before	pound everything together and crush it vigorously,	The white lead is pounded and sifted, and the gum melted. Then they knead the latter with the white lead,	and knead it with the white lead, after having pounded it and sifted;	Then knead with it the white lead that you had sifted, making a stiff paste,

⁷⁵ Al-Rāzī, *Zīnat al-kataba*, ed. al-Qārī 2011, 224a (no. 16); Ibn Bādīs, *Umdat al-kuttāb*, ed. al-Ḥalwaḡī and Zakī 1971, 139–140; al-Jawbarī, *The Book of Charlatans*, ed. Dengler 2020, 328, 329 (§ 22.7); al-Muẓaffar al-Ġassānī, *al-Muḥtara' fī funūn*, ed. Šāliḥiyya 1989, 94; al-Qalalūsī, *Tuḥaf al-ḥawāṣṣ*, ed. al-'Abbādī 2007, 38; see also Fani 2023, 69 (R XI), 110–111 (MM V.5); Levey 1962, 37a.

and make it into the shape of hazelnuts (<i>banādiq</i>).	then make it into [the shape of] hazelnuts.	make it into [the shape of] hazelnuts,		and make it into the shape of hazelnuts.
Put them in a small earthenware vessel (<i>fahḥāra</i>) or in a clean walnut shell until they dry out.	Make them dry out in the shade.	and dry these in the shade.	Then put the preparation in a shell (<i>maḥāra</i>), protected from dust.	Put them in a small earthenware vessel and let them dry out.
When you need, drip (<i>qaṭṭara</i>) a drop of pure water upon [one of] it and stir it with the tip of a clean <i>qalam</i> , with no trace of ink on it, and daub (<i>talā</i>) it over the error (<i>ḥaṭa'</i>); do not daub it until the ink (<i>midād</i>) you have used is dried.	When you need, pour (<i>sabbaba</i>) a little water upon [one of] it, and daub it over the writing (<i>kitāba</i>) with the tip of a <i>qalam</i> .	When they want [to use] this preparation, they take one of these hazelnuts, pour a little water on it, stir it with the tip of the <i>qalam</i> , and daub over the writing they want to remove.	When you need, pour a little water, stir it with the tip of a <i>qalam</i> or something else, and daub it over the letters that you want to remove and make them disappear.	When you need, drip a drop of pure water upon [one of] it and stir it with the tip of a clean <i>qalam</i> , with no trace of ink on it, and daub (<i>talā</i>) it over the writing (<i>ḥaṭṭ</i>); do not daub it until the ink (<i>midād</i>) is dried.
After that, leave this preparation to dry completely for one hour, then you can write on it what you want.	Then you can write on it what you want.	Then they leave it till it dries, and after that they write anything they like. Be alert to the tricks of this tribe of charlatans! Learn to detect their deeds and the things they do to deny they wronged their rights and assign rights to those who have none! They have dodges only they know. Wise up to these things!	Then leave it till it dries and write over it with what you want; do not write except on dry ink (<i>midād</i>).	After that, leave this preparation to dry completely for one hour, then you can write on it what you want.

Appendix 3

Preparation of clay crayons for teaching by the *Kātib* Abū Bakr Muḥammad ibn Muḥammad al-Qalālūsī.⁷⁶

As for the clay [crayon] (*tīn*) used for teaching, it comes in different types; among these is the one made of white lead (*bayād abyād*); we will mention the best ones among them, which fall into two categories: the simple ones and the compound ones (*murakkab*). As for the simple ones, they consist of Fez clay, Armenian bole, bistort,⁷⁷ and Greek ochre, all of which are substances used for teaching, without mixing them together. It is essential for the skilled craftsman to test it following a precise procedure in their work by rubbing every piece of earth on the slate used for grinding spices (*ṣilāya*), then placing it in the shade, and making them into pastilles; then the expert teaches with it, while the non-expert teaches as best as he can, [for example, using] among the plants that of turmeric, which is yellow in colour according to the reports. As for the compound ones, there are several types: [for example,] one part of white lead and two parts of ochre ground together, sieved, and made into a paste with dissolved gum, to which rose water has been added before, then made into tablets and dried in the shade. Another one is [made with] one part of bistort, one eighth of saffron, half of white lead ground together, rubbed on the *ṣilāya* with rose water, left [to dry] until it can be shaped into pastilles, then formed into pastilles and left to dry in the shade. Another one is [made with] the desired amount of turmeric, which is cooked in water until its colour is extracted, then the clear part is taken, and this water is set aside; at this point, one part of minium (*zarqūn*) and one part of white lead are taken, then rubbed on the *ṣilāya* with that solution, and then formed into pastilles. Another one is [made with] one part of Fez clay, two parts of yellow earth, and dissolved gum, with which they are rubbed and then made into pastilles. Another one is [made with] one part of alkanet and one part of turmeric, ground and cooked until their colour is extracted; then the clear part is taken and put on a plate in the sun until it congeals, then it is pulverised and made into a paste with dissolved gum. There are many types of those obtained by mixing various substances, but what I have mentioned is sufficient, as the blessing lies in moderation.

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⁷⁶ See n. 17 above.

⁷⁷ The identification of this plant (*anḡubār* or *anḡibār*) is not certain, but it is most likely the *Polygonum bistorta* L. (see Bedevian 2006, s.v.), from whose rhizome a yellow or brownish pigment and starch are extracted. The starch, when mixed with other flours, has been used since ancient times in baking. It is probably this powdered starch that was used to obtain the chalk.

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Abbreviations

GAL S = Carl Brockelmann, *Geschichte der Arabischen Litteratur, Supplementband*, 3 vols, Leiden: Brill, 1937–1942.

ĠB = ‘Abd al-Raḥīm b. ‘Umar b. Abī Bakr Ġamal al-Dīn al-Ġawbarī, *al-Muḥtār fī kašf al-asrār*.

IB = al-Mu‘izz al-Tamīmī al-Šanḥāġī Ibn Bādīs, *‘Umdat al-kuttāb wa-‘uddat ḡawī al-albāb*.

IḤ = Iṣḥāq Ibn Ḥunayn, *Ta’līq fī qal’ al-‘āṭār min al-tijāb*.

IS = al-Ḥasan ibn Muḥammad al-Qurašī al-‘Abdarī al-Iskandarī, *al-Ḥiyāl al-bābīliyya li-l-ḥizāna al-kāmīliyya*.

MM = Yūsuf b. ‘Umar b. ‘Alī b. Rasūl al-Muẓaffar al-Ġassānī, *al-Muḥtara’ fī funūn min al-šuna’*.

Q = Abū Bakr Muḥammad b. Muḥammad al-Qalalūsī, *Tuḥaf al-ḥawāšš fī ṭaraf al-ḥawāšš*.

R = Muḥammad ibn Zakariyyā’ al-Rāzī, *Zīnat al-kataba*.

ṬB = Abū al-Ḥasan ‘Alī b. Sahl Rabban al-Ṭabarī, *Firdaws al-ḥikma fī al-ṭibb*.

Z = Muḥammad ibn Abī Bakr al-Zarḥūrī, *Zahr al-basātin fī ‘ilm al-mašātin*.

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