ISLAM: ESSAYS ON SCRIPTURE, THOUGHT AND SOCIETY

A Festschrift in Honour of Anthony H. Johns

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BRILL
LEIDEN · NEW YORK · KÖLN
1997

MASS PRODUCING HOURI'S MOLES

or Aesthetics and Choice of Technology in Early Muslim Book Printing

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Transmissions of Islam have been radically affected by the use of print. Print has been as significant for Islam over the last two centuries as it has for Christianity over the past five centuries. In both cases the fires of reform and fundamentalism have been stoked by the new technology of communication. Muslims adopted his powerful technology from the West by processes that are still little understood. If the initiation of this change were better understood, we might also gain a better appreciation of why Muslims spurned print for three centuries while it flourished in Christian Europe.

My argument is that Muslims took up printing by two paths.

1. *The First Book Printing in the Middle East*

The Ottoman Government was consistently wary of printing. Early decrees in 1485 and 1515 forbade the printing of Arabic, though importation of books was allowed. Turkey's Christian and Jewish communities printed in Hebrew, Latin and Armenian from the sixteenth century, and Syrian Christians began sporadic printing in Arabic in the eighteenth century.[1] In 1728, the Ottoman court initiated Muslim printing under government sponsorship, but no independent Muslim presses were permitted until well into the nineteenth century. The press law of 1888 kept book printers and importers under tight administrative control.

The initiative of 1728 was part of the Ottoman court's project to emulate aspects of the France of Louis XV. A press was operated from 1728 to 1745 under the management of Ibrāhīm Müteferriḳa. It used imported French printing equipment with type cut and cast in Istanbul to produce rather costly books for well-placed Ottoman

[1] Oman 1989.

literati. Specifically excluded from the press were works on religion, namely the Qur'ān, *tafsīr*, *ḥadīth*, *fiqh* and *kalām*. Later, as part of a renewed military and fiscal modernisation program, semi-official printing was revived at Istanbul in 1780. With a similar purpose, a government press at Cairo was established at Būlāq in 1821–22 by Muḥammad 'Alī, who had watched Napoleon use imported printing equipment disseminate administrative orders and proclamations in Arabic and believed that the Būlāq press would serve as an efficient means of improving the army and agriculture.[2]

The repertoire of these government-controlled presses in Cairo and Istanbul was rather restricted. The Ottoman ban on printing works of religion had been waived in 1803 for the publication of the Turkish catechism *Risāla-i Birgewī*, but the early diet of printed books overwhelmingly comprised technical manuals, dictionaries and grammars, with a few collections of *fatāwā* and works on dogma. Books on religious topics, which enjoyed longer print runs, began to be advertised for sale in the Ottoman Government gazette after 1831.[3] By 1850, about 650 editions of all kinds had appeared at Istanbul, while Būlāq under Muḥammad 'Alī issued about 350 titles, of which about half were technical and scientific manuals, many translated from French.[4]

Marketing was primitive in this early period. There was but one book depository for Egypt, at Būlāq, with "pyramids of unsold stock". In 1831, an uncharitable French observer commented:

> . . . Books on tactics and medicine may have their uses, but address themselves to only a tiny number of readers. None of the others, with few exceptions, have any market or any circulation. They are multiplied by the press only to be stacked up in warehouses where it seems they are condemned to an eternal oblivion. No-one buys them, no-one reads them, because they do not accord with the needs of the present, nor with the spirit of the populace who require instruction and

[2] Berkes 1969, Duverdier 1987, Albin 1988.

[3] Baysal (1981:122) says a *firman* (not a *fatwa*) authorised this; Berkes (1964:127) says "the change seems to have come about gradually without fuss or a new authorisation."

[4] See Hammer 1831:7.583–595, Baysal 1981, Bianchi 1843, 1859–63, Verdery 1971, Heyworth-Dunne 1940, Albin 1988. The later fame of the Būlāq press may lead to an overestimate of its early scope and impact. Only after its disbandment and relaunching in 1861 did it take up large scale printing of books on history, language, literature and religion, in addition to technical works. Most of the Būlāq editions of Arabic classics date from the last thirty years of the nineteenth century (Crabbs 1984:201).

> enlightenment. Even at first glance it is easy to see how it stands with this printery, set up at such great cost, like so many other industries imported from Europe with insufficient care taken to adapt them to the country.[5]

The most saleable works were apparently put through the Būlāq press by private editors on their own account.

2. *Muslim Printing in India*

The picture in India is quite different.

The presence of the European press in India is very old, reaching back to the Jesuit press in Goa in 1556. However, not much printing of significance took place, beyond some Christian mission printing in Madras, until about 1780, when a fair number of presses began operating in the Presidency capitals of Calcutta, Bombay and Madras. In contrast to the Ottoman government, the English Company had an ideological preference for independent presses, whether run by Europeans or Indians. Yet Muslim involvement in this typographic printing remained marginal. The printing of literary and historical works in Persian in Calcutta (after 1781) and Bombay (after 1818) was undertaken on presses run by Europeans or Parsees respectively, with only editorial participation by Muslims. The first Muslim-sponsored printing came with the inauguration 1819 of a Royal Press by the Nawwāb Ghāzī al-Dīn Ḥaydar of Oudh. From this press over the next decade there issued several Persian works in praise of the Nawwāb, and two publications in Arabic: a *Panjsūrah* (five *sūra*s of the Qur'ān) and the first three volumes of an Arabic dictionary, *Tāj al-lughāt*.[6]

Then, suddenly, everything changed. In 1824 the Indian Company equipped each of its Presidencies with several of the recently invented lithographic presses, which it judged would provide a versatile and cheap means of printing administrative documents. Four of these presses were handed over to the Bombay School Book and School Society, and immediately applied to the printing of textbooks in Maratha, Gujarati and Hindustani (Urdu). In the first year, Indian operators were trained and 17,000 books were produced.

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[5] Geiss 1907/08:212.

[6] Storey 1933, from Sprenger 1844.

Simultaneously, a history of Bengal, in Persian, was lithographed at Benares.[7] Over the next decade and a half, lithographic presses mushroomed all across northern India. The great majority of the new presses were Muslim owned and operated. They were private presses, independent of government subsidy or control—which was formally held at bay by the 1835 Press Act.[8] Major centres of Muslim publishing emerged at Lucknow-Cawnpore, Agra, Delhi, Lahore and Hyderabad (Deccan). Lucknow alone had more than a dozen lithographic presses in 1848, all in Muslim hands. By that time the presses of Lucknow-Cawnpore alone had published about 700 titles, some in up to ten editions, mainly comprising student's books, polemics, and religious tracts.[9] And the pace continued to quicken. By mid-century, Urdu was printed all over India, and practically all the important towns in northern India had their own lithographic printing presses. A contemporary observer estimated that there were about 112 such presses in different parts of the country. Lithography had become a very lucrative trade.[10] Indeed, so attractive was lithography that the Royal Press of Oudh switched to the new technique mid-way through the publication of its multi-volume Arabic dictionary.

While the marketing of books was disorganised, the conjunction of commercial drive and popular repertoire ensured strong demand. A sales agent for Ḥājj Ḥar[a]main Sharīfain, the first Muslim printer of Lucknow,

> would venture off with thousands of books in a bullock cart, going as far afield as Rawalpindi. In those days books were very rare, and a great novelty. He would be received with pomp, and could sell at any price he chose: usually Karima ma Muqiman for a few annas, Gulistan or Bostan for 3 or 4 rupee per volume. Even so, supply could not meet demand. After books had run out, it would be months before another consignment could be arranged.[11]

This sketch of Indian private enterprise in the market place is a far cry from the contemporary account of the Egyptian official press at Būlāq that was quoted earlier.

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[7] Caresajee 1958.
[8] Govi 1977, Davis 1983.
[9] Diehl 1973.
[10] Haider 1981, Mohl 1853.
[11] Sharar 1975:107.

3. *The Influence of the Indian Model*

By mid-century, printing in Cairo and Istanbul was still a trickle beside this Indian torrent. The Indian model, with its commitment to lithography, proved influential. In Persia, after a brief flirtation with government-sponsored typography in Tabriz in 1819 and in Tehran in 1824, lithographic printing began in Tabriz 1835 and in Tehran 1844, and soon after in Isfahan and other cities. As in India, lithography spread quickly. By about 1860, any Persian town of consequence had at least one, and often several, lithographic presses.[12] As Browne remarked,

> One of the strangest things connected with the history of the art of printing in Persia from the time of its introduction until the present day is that notwithstanding the chronological priority of the introduction of typography into Persia, it entirely went out of fashion in a short while, and that for a long time (more than fifty years) the presses of Persia confined themselves exclusively to lithography . . .[13]

In Southeast Asia, where Muslim printing began in 1848, the following half-century of Muslim printing was similarly almost wholly lithographic. In both cases, Indian-style lithographic printing was focused from the outset on religious texts.

The government presses of Turkey and Egypt also employed lithography, but in the European manner. It was used for maps, illustrations, diagrams, formulae etc., a substitute for etching as an adjunct to typography; it was also used to reproduce administrative circulars, like the *Jurnāl al-Khidīw*. When we do find books printed by lithography, the presses belong to technical agencies. So when the *Dalā'il al-Khairat* was lithographed in the hand of the celebrated calligrapher Raḳīm Efendī in 1857, it was printed on the lithographic press of an Ottoman Engineers Regiment. By the 1850s lithographic book printing had begun to gain ground in Istanbul particularly, but it remained the poor cousin of typographic printing.[14]

This began to change in the 1860s. The turmoil surrounding the disbandment of the Būlāq press in 1861 made space for vigorous commercial printing for a popular religious and literary audience. A

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[12] Polak 1865:279, Walther 1990:230. Avery 1991:817–819, Farmayan 1968:145. For Iraq, see Albin 1981, 1985:15.

[13] Browne 1914:9.

[14] Peron 1843, Geiss 1907/08, Hsu 1985, Walther 1990, Schlechta-Wssehrd 1853–55, Baysal 1981.

handful of private presses had been operating in Egypt in the previous decade, but private printing became significant as skilled personnel who had previously worked at the Būlāq press found their way into private printing. Private printeries using both typography and lithography proliferated, and publishers-cum-bookshops began printing works in popular demand, or commissioning them from jobbing printers. These were "private enterprise establishments, whose sole motive was profit and which published fast turn-over, dubious quality books, mostly on religion, popular reading and fiction."[15] These speculatively printed books were supplied to the book merchants who operated in the shadow of al-Azhar Mosque. They had previously specialised in providing cheaply copied manuscripts, and now saw a profitable alternative.

Muslim printing in the various centres of the Maghrib followed in the wake of these Egyptian developments, and similarly employed a combination of typography and lithography, usually under government supervision.[16]

In short, the history of early Muslim book printing reveals two separate initiations of printing, one in the Middle East, the other in India. The government-sponsored typographic printing in the Middle East is earlier, but had no influence on the rapid adoption of lithographic printing by Muslims in India. The two initiatives are further distinguished by different initial repertoires, one in which religious works are absent or marginal, and the other in which religious works are central. The power of lithography in this first era of book printing is evident. Lithography held sway from the beginning in India, Iraq, and Southeast Asia, displaced typography in Persia, and stimulated a great upsurge in the bulk and variety of printing in Turkey, Egypt, and the Maghrib.

4. *Preconditions for Printing*

This unexpectedly complex history of printing initiatives has implications for our understanding of the circumstances in which printing was adopted by Muslims. The notion that Islam was resistant to print is generally extrapolated from the Ottoman experience. The con-

[15] Rizk 1978:555.
[16] Safadi 1981, Albin 1988, Roper 1982, Demeerseman 1953:363, 1954:2.

trasting experience of Indian Muslims, however, provokes the question of how generalisable this Ottoman experience was.

Explanations that rely upon the exercise of state power need to be reconsidered. It is wholly credible that an authoritarian government whose writ ran sufficiently wide for a prohibition to have effect might well wish to avoid the immensely disruptive consequences of print that could be observed on its doorstep in Europe. No Christian government in Europe's print era ever enjoyed this option, so fragmented was political authority in Christendom.[17] Nor, significantly, did any government achieve more than fleeting control across the Indian sub-continent before 1857. It is also wholly credible that the Ottoman application of state power was shaped by its alliance with a clerical magistracy. Watt[18] reflects a general opinion when he characterises the higher grades of the Ottoman religious hierarchy as a privileged aristocracy "more interested in maintaining their own power than in promoting the welfare of the empire as a whole." He adds: "This is exemplified by their opposition to the introduction of printing." In fact the Ottoman evidence here is a little ambiguous: the high religious authorities approved, supported and administered Müteferrika's printing experiment.[19] The Ottoman integration of state and clerical interests, though normative in its day, was far from universally achieved in other societies in which Muslims pursued their fates, as British India and the Dutch East Indies remind us.

Or was conservatism intrinsic to the organisation of Islamic tradition itself, independent of state power?[20] Robinson takes up this question in his "Technology and Religious Change".[21] He adapts Graham's ideas of concurrent oral and written transmission,[22] in which Qur'anic recitation set the pattern for other dogmatic transmission, and "writing and literacy have always danced attention on a superior oral tradition." For Robinson the important dimension of this

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[17] Realpolitik is in play here: the Christian Dutch East India Company enforced Ottoman-like restrictions on printing in Muslim Southeast Asia, where its writ ran wide, while in Europe the Dutch enjoyed perhaps Europe's freest and most diverse press. Europe's disunity undermines Duverdier's (1987:354) position on European reluctance to provide printing technology to Muslims.

[18] 1988:34.

[19] See Káldy-Nagy 1974, Mardin 1962:217, Duverdier 1987:336. Alleged protests by the scribes' guilds of Istanbul against the first experiments with printing are not well attested. Káldy-Nagy 1974:204–205.

[20] Bulliet 1987, Safadi 1981 etc.

[21] 1993.

[22] Graham 1987.

dualism is that "person to person transmission was at the heart of the transmission of Islamic knowledge. Muslim scholars travelled the world to receive in person the reliable transmission of knowledge." The written word, unexpounded, is a veil that separates the student from discovery of meaning. The principally valid transmission is from teacher to pupil, recorded in the *ijāza* awarded on completion of the study. (The same path to knowledge prevailed in the mystical orders, and among calligraphers.) Printing, by striking at person-to-person transmission, "struck right at the heart of Islamic authority". Therein, for Robinson, lies the explanation for Islam's conservatism toward print. "No Muslim was likely to adopt it until he saw a good in printing greater than the evil it might cause." This extreme situation arose, Robinson argues, under Christian colonial rule, when "Islam itself was at stake and print was a necessary weapon in defence of the faith."[23] In Robinson's view, this is why the first active involvement in religious printing is evident among Muslims in India (and in Russia).

However it is not clear that Islamic transmission was always so conservative as Robinson's sketch suggests, nor that Muslim printing is best understood as a response to any external threat. In the early nineteenth century there were Hindu revival movements, like that of Rammohan Roy, which responded to the Western challenge. They were led by English-educated Hindus, a class that had no Muslim counterpart until the later rise of Sayyid Aḥmad Khān and the Aligarh College group. Muslim printing was therefore not innovated by a déraciné élite, but—as Robinson concedes—exploited by active mainstream leaders concerned to reform and intensify Muslim belief. The notion that it was the European challenge which broke a conservative Islamic mould in India may underrate the dynamics of the Indian Muslim cultural environment.

Indeed, Levtzion and Voll identify vernacularisation as a major theme in their survey of Islamic renewal and reform in the eighteenth century in those societies with significant non-Muslim populations or residues, including India.[24] The push for vernacularisation involved experimenting with new paths of transmission. Reformist *'ulamā'* and sufis who had long been challenging the old Perso-Islamic ways had begun to transmit knowledge in regional languages.

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[23] Robinson 1993:237.
[24] Levtzion and Voll 1987.

In the eighteenth century, sufi ideas were spread through rural areas by means of mystical poems in the vernacular. "Urdu . . . became the recipient not just of many translations of the Quran and the Hadiths but also of dozens of classics of Islamic scholarship from al-Ghazali to Ibn Khaldun. Sufis followed suit, translating more and more of their *malfuzāt* and *maktubāt* from Persian into Urdu so that the example of the saints could reach fresh generations. . . . This shift away from the old imperial language coincided with the introduction of the lithographic printing press."[25] The nineteenth-century rise of the press in India parallels the transformation of Hindustani into the new written vernaculars Urdu and Hindi.[26] The adoption of printing thus coincides with a great upsurge in vernacularisation, internal reform, and revival. Indeed, it is exceedingly difficult to disaggregate these concurrent developments. An example used by Robinson illustrates the point. Sayyid Aḥmad Barelvī's followers were active users of the press to promote their reformist ideas, notably through lithographic editions of *Sirāṭ al-Mustaqīm*, complied by Sayyid Aḥmad first in Persian, but soon translated and published in both Persian and Urdu, and *Taqwiyyat al-Imān* composed and printed directly in Urdu. Undoubtedly the press was critical in the momentum of this group, but the fact remains that Sayyid Aḥmad had compiled *Sirāṭ al-Mustaqīm* in 1819[27]—at a time when the only Muslim printing in India was undertaken on the Royal Press at Oudh—and so could hardly have written it for the press.

So, at the time when print was adopted there were already long-standing forces for vernacularisation, and active reformist and revivalist groups who had shown an interest in cultivating new modes of transmission, and who indeed took enthusiastically to print . . . but only in the early nineteenth century. The precise timing of the adoption of printing by Indian Muslims seems not to be wholly explained by the ideological climate. A more mundane fact cannot be overlooked: that is, that a new printing technology had just become available. It can be shown, I believe, that lithography has qualities that could explain its attractiveness to Indian Muslims who had not previously taken up typographic printing.

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[25] Robinson 1991:124.
[26] Brass 1974:186.
[27] Metcalf 1982:56.

5. *Qualities of Two Printing Technologies*

Typographic printing and lithography are quite different technical processes. Both are means of achieving multiple reproduction of text, and carry the immense cultural and social implications which flow from that. However, the two processes have significantly different implications on the aesthetic and commercial level.

Moveable type printing has been invented twice, probably independently, once in China in the eleventh century, and again in Germany in the fifteenth. The idea is a simple extension of wood block printing which profits from the fact that the script to be reproduced is made up of independent items arranged in a line of uniform height or width. These were characteristics of both Chinese and European writing systems. Moveable type did not flourish in China but did so in Europe for reasons of economy. The major capital investment in printing using moveable type is the stock of interchangeable character types. Moveable type printing proved uneconomic for the morphemic Chinese writing system which required thousands of types. The European languages, which have alphabetic writing systems operating on the phonemic level, require about the number of characters provided on a standard typewriter.

In the Middle East early wood-block printing of Qur'anic verses and other religious formulae several centuries before Gutenberg,[28] did not develop into typography. An easy transition to moveable type was barred by the nature of the Arabic script. The Arabic writing system, though operating on the phonemic level, is neither alphabetic nor based on the linear arrangement of independent items. Its letter forms vary according to position, and in the scribal hand it abounds with non-linear ligatures and kerning. A reasonable approximation of the scribal hand might be achieved in moveable type, but only with ingenuity and at considerable cost. At the time of Turkey's script reform in 1928, a single-font printer's case for printing Turkish in upper and lower case Roman script required 99 types. For printing Turkish in Arabic script, 645 types were needed, and that after ignoring many ligatures.[29] A modest press would require at least

[28] Oman 1989:795, Bulliet 1987.

[29] Duda 1935:241–242, with illustration. Hammam (1951:158) records that in about 1950 the standard Būlāq press font had 465 letters, while private presses got by with 365, though with reduced aesthetic effect. Hourani 1982:38, cf. Ellis 1955:11–12.

a couple of type sizes, if not a couple of styles—each requiring a font of similar size. Thus the same economic barrier that crippled early Chinese typography was also a hurdle, set not quite so high, to Arabic typography.

In fact the initial demands confronting Arabic typography were more stringent than this suggests. They can be understood, perhaps, by recalling the transitional forms of early printing in Europe. In reality, European manuscript writing was not a purely linear arrangement of independent items. The prevalent Gothic manuscript hand was semi-cursive, and included a number of conventional abbreviations marked by diacritics, a few alternative medial and final letter forms, and many ligatures. Gutenberg and other early printers took as their brief the closest possible reproduction of manuscript forms. To achieve this, they cast many additional types, making the technology considerably more costly and expensive. Gutenberg's font comprised about twice as many types as became the standard later.[30] The cost was, in the beginning, a price that had to be paid if print was to satisfy the book reading and buying public. Over the first hundred years moveable type printing became increasingly alphabetised, and thereby more efficiently adapted to typography. In Gothic print, scribal abbreviations fell into disuse and ligatures were reduced in number. More radically, the Roman and Italic types (whose discrete letter forms better suited typography) began to displace the scribes' Gothic script. But it took about a hundred years until it was no longer necessary to disguise a book as a manuscript.[31] From this time, an increasing divergence between Europe's printed and handwritten scripts occurred.

No such initial concessions were made in Arabic typography. This is not surprising, since all the early typographic presses, in Europe, the Middle East and India, depended upon European technicians already accustomed to a strongly alphabetised type script, who no longer appreciated the need to make the same concessions to Arabic readers that Gutenberg had made to his European customers. In India and Southeast Asia the Christian missions were serious offenders. Early Muslim experiments, like that of Müteferrika or the early Būlāq press were more sympathetic, but still depended upon European

[30] Hirsch 1978.
[31] Chappell 1970:101.

technicians and faced constraints inherent in the technology.[32] A serious accommodation of manuscript reading would require a huge number of types. The capital costs would be prohibitive and the task of the type composers extremely complex. As practised, typography did not have the capacity to match the copyist's hand. The results appeared consistently ugly to readers used to manuscript styles. European-printed Arabic texts were poorly regarded. In the early eighteenth century, for instance, a Jesuit-printed copy of Ibn Sīnā's *al-Qānūn fī 'l-ṭibb* languished in an Istanbul bookshop, priced well below comparable manuscripts.[33] The problem was often conceived as one of poor type design. Undoubtedly there was enough of this. In the seventeenth century, Ibrāhīm Efendī identified this as the reason for Muslim rejection of books printed in Europe. Their many errors and poor choice of characters were no better than the writing of African Muslims![34] But whether the type fonts were cast in Europe, India or the Middle East they evoked negative reactions. The problem lay deeper. Typographic print was less dense than readers were accustomed to, while the lines of print themselves comprised dark, stilted, uniform imprints, not the subtly varied strokes and styles of the manuscript.[35] When eventually in 1906 the Būlāq press commissioned new fonts designed by a committee of calligraphers,[36] satisfaction with the outcome reflected not only improvements in letter forms and typesetting techniques, but also nearly a century of habituation to a new style of representing text.

Lithography altogether lacked the mechanical rigidities of type. Its complete flexibility in reproducing graphic forms made it an illustrator's medium in the West. This was critically important for its success in the Islamic world, for it meant lithography was capable of reproducing calligraphy, and achieved immense popularity for that reason. A book printed by lithography was essentially a manuscript reproduced. Lithography could accurately convey the grace and fluidity of

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[32] The missionaries, always prescriptive, kept their fonts small by imposing alphabetic principles on to Arabic writing, equating one letter with one type element and allowing only for the canonical initial, medial and final forms. For reproductions of mission printing, see Gallop 1990. Müteferrika's type was aesthetically ahead of its contemporaries (Duda 1935). On Būlāq, Albin 1988:342.

[33] Roper 1988:51.

[34] Demeerseman 1954:41.

[35] Medhurst 1829, Roper 1988:43, 125 and 264, Oman 1989:803, Weil 1907:52, Baysal 1981:122.

[36] Hammam 1951.

a good manuscript, in all respects except the use of colour—and that too was achieved sometimes by overprinting, by hand rubrication, or by gilt stamping. Lithography could reproduce the nine scripts, as required.[37] By contrast, typeset printing offered a travesty of scribal form.

In case this argument seems too squeamish about aesthetic preferences, or is thought to imply an innate conservatism in Islamic attitudes, consider the uses of lithography in the West. When Senefelder discovered lithography, his first thought was that it could be used to reproduce musical notation.[38] Interestingly, musical notation, though linear in principle, is rather like Arabic script in requiring complex ligatures. Musical notation had never been reproduced successfully by moveable type, and at the end of the eighteenth century was most commonly etched. Lithography provided a practical alternative, and in the later form of photolithography became the technique of choice for printing music.[39] By contrast, lithography was never used in Europe for extensive reproduction of written text. After three and a half centuries of typography, the European eye had become habituated to the typographic style of public text, which had become markedly different from the handwriting used for private text. Lithography would reproduce handwriting, and was therefore deemed unsuitable for printing books. The results looked amateurish and untidy.[40] This conviction blinded European missionaries to the potential of lithography as a cheap and adaptable means of spreading their message. Lithography was considered for Arabic printing by the Malta mission in 1827, but rejected because the perfect standard of calligraphy required was unobtainable, "and less than perfect will not do".[41] The alternative of neat and tidy but clumsy type was considered more perfect. In Batavia, the missionary-printer Medhurst acknowledged the advantages of lithography—its flexibility, its ease of operation, its cheapness—and yet was concerned over the "irregular appearance of a book thus printed" and the fact [!]

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[37] See Diehl 1973:123, Demeerseman 1953:354 and 378, Dewall 1857:194, Bianchi 1859–63:§103, Walther 1990:231.

[38] Senefelder 1819:13.

[39] Satisfactory results with typography became possible only during the nineteenth century with the development of "mosaic" type which abandoned the linear principle, required very large fonts, and involved very complex typesetting; see Poole & Krummel 1980; Humphries & Smith 1970:26–29 and 34–36.

[40] Cf. Twyman 1990:119–125.

[41] Roper 1988:125.

that lithography could not readily be combined with European letters. Knowing however that his native audience rejected the only Arabic type font available to him, Medhurst used lithography to reproduce an extremely regular stiff Arabic script that imitated an Arabic type font of his own design.[42] A comparable sensitivity to graphic conventions is at work on both sides, with opposite results: Muslim objections to an alphabetised Arabic typography because it did not resemble the handwritten manuscript, and Christian rejection of lithography for book printing precisely because it did resemble handwritten script.

6. *The Special Place of Calligraphy*

Typography's shortcomings become more marked when the wider literate landscape is considered. Books and other written materials demand varying degrees of aesthetic attention. At the lower end, on a utilitarian level, were the staples of the book trade, the products of professional scribes. Where there was an established market for books scholarly works and literature in Arabic and local languages might be copied by a professional scribe, the *warrāq* or *kātib*. A steady, clear hand was adequate. In such cases the demands placed upon print reproduction were not so onerous. Indeed, it was here that typographic print was allowed to make its first inroads, under Müteferrika, and the later government-run presses of Istanbul and Cairo. Nevertheless, even here, the graphic flexibility of lithography better suited the tastes of the early market place. The preface to a Lucknow literary lithograph of 1843 made this telling comparison with its typographic predecessor:

> The story was published in Calcutta and in other places more than once. But it was never brought out with such beauty and elegance as in this print which simply charms the readers . . . The print is lovely beyond praise: the title page is in white letters, so different from earlier editions. The popular stories are printed in bold letters looking like a garden with beds of flowers here and there.[43]

Lithography, not typography, could rival the scribal product—at, of course, a fraction of the price.

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[42] Medhurst 1829, 1838:573. Similarly, the Singapore missionary, Keasberry, who experimented with lithography to produce multi-coloured books and magazines in the Arabic script, never used it for Roman script.

[43] Diehl 1973:123–124.

Also in this utilitarian domain lay scholarly texts. Such texts might be copied professionally or compiled by disciples of a teacher under whom the text was read and verified.[44] Again clarity rather than stylishness was uppermost. However the typical mode of instruction proceeded by commentary on an earlier master's text, and this is given form in the scribal conventions of the scholarly manuscript. The result could be a tangled skein of text on the scholar's page: text, commentary, supercommentary, or marginal or interlinear glosses, or charts and diagrams, in script of different sizes and emphasis. Lithography could reproduce all this as readily as plain text. For typography it was a struggle. It could manage to convey these functionally critical hierarchies and interconnections only rather clumsily through parentheses and marginalia. In time, typographic printing would offer compensating advantages by adopting new organising conventions, including paragraphing and punctuation, but its initial deficiencies were certainly a handicap.

Moving up the scale of social prestige and religious potency, we find the higher realms of writing in the hands of the calligrapher (*khaṭṭāṭ*). The calligrapher was as much an artist as a scribe. Few books were actually copied by calligraphers. In fact, the Qur'ān was the only full manuscript usually calligraphed, and even then usually only the first few pages would be fully decorated and illuminated. Indeed a good calligrapher might regard it as beneath his dignity to copy a whole manuscript, other than the Qur'ān, for high standards could not be maintained throughout.[45] Calligraphers generally displayed their skills, and earned a living, by writing prayers, selections of poetry, and religious icons: the *basmalah*, the names of Allah, invocations, and above all Qur'anic verses and extracts believed to have special potency. A fine piece of this kind could serve as an amulet or, put on display, fill the house of its owner with blessing.[46] Such items of calligraphic art were not only the main sources of the calligraphers' income, but also –and this must be stressed– the most

[44] Pedersen 1984: ch. 3.

[45] Sharar 1975:103–105. Sharar is amusing on this point. He relates (106) the following story, with rather fetching snobbery: "When Haji Harmain Sharifain inaugurated a printing press [probably the first private press in Lucknow], after much exhortation he got Mir Bandey Ali to agree to write out *Panj Sura*, five subsections of the Qur'ān. Mir Bandey Ali put in an immense amount of work and took many days to accomplish the task. When he took it the Haji and had a last look at it in his presence, something about it displeased him and instead of handing it over to him, he tore it up and said, 'I can't do it.'"

[46] Benjamin 1887:290, Schimmel 1984:35.

popular uses of the written word. This terrain lay well beyond the reach of typography, for no mechanical technique could emulate its subtle strokes and the intricate interlacing of graphic forms. Lithography, as an illustrator's medium, could do so.

Resistance to any typographic perversion of calligraphy was reinforced by a sense of calligraphy's contribution to Islamic cultural self-identity. The high standing of calligraphy, and its elaborate development, is peculiar to Islam. This is not just an argument that the calligrapher's writing has an aesthetic and spiritual dimension. As in Europe or China, so in Islam, skill in calligraphy was a fitting attribute of the scholar, calligraphy and medicine being the two vocational studies worthy of *'ulamā'*. But in Islam the position of calligraphy was extraordinarily elevated, surpassing even the scholarly cult of calligraphic brushwork in China. In Hitti's words, "The art of calligraphy, which drew its prestige from its object to perpetuate the word of God, and enjoyed the approval of the Koran (68:1, 96:4) . . . became the most highly praised art."[47] The strictures placed upon representations of the human form, and a preference for avoiding naturalistic depictions of any kind, promoted calligraphy to the supreme visual art. As a seventeenth century Indian Muslim noted, "If someone, whether he can read or not, sees good writing, he likes to enjoy the sight of it."[48] As a hallmark of high culture, and an aristocratic recreation, calligraphy has played a role analogous to painting in the post-Renaissance West. For Ibn Khaldūn, calligraphy was "a noble craft, since it is one of the special qualities of man by which he distinguishes himself from the animals . . . The quality of writing in a town corresponds to the social organisation, civilisation, and competition for luxuries (among its inhabitants)."[49] The very authenticating symbol of authority, the equivalent of a European coat of arms, was the *ṭughrā*, an elaborately wrought monogram of a ruler's name. The practice and collection of fine calligraphy became an indulgence of the aristocratic aesthete. In such circles, a page of fine calligraphy might be worth an Arab horse.

As the deep rationale for calligraphy was embellishment of the Qur'ān, so the Qur'ān was calligraphy's most fit subject. For the people of the Book, the Qur'ān was honoured above all through

[47] Hitti 1960:423.
[48] Schimmel 1984:33.
[49] Rosenthal 1967²: §5.29.

embellishment and ornamentation of its vocal performance according to the canons of *tajwīd*. But as Graham has pointed out, the Muslim tradition has been both the most oral and the most elaborately chirographic. "Muslim veneration of the written Qur'ān exemplar, or *muṣḥaf*, and delight in the elaborately calligraphed qur'anic word have been prominent parts of the highly oral Islamic milieu."[50]

This intimate association of calligraphy with the revealed Word and its role as the supreme visual art have inspired poetic and mystical imagery. Islamic poets could interpret everything as a book, and see writing everywhere. As Schimmel (1984) reminds us, a poetic trope was to compare the face of the beloved to a flawlessly written copy of the Qur'ān, mirroring the calligraphic conceits that made images of animals and men from prayers or verses of the Qur'ān. The dots of a famous calligrapher were transformed into moles on the cheeks of the houris in Paradise. The same intimacies excited sufi thinkers, who drew analogies from the creative processes of calligraphy; for instance, the relation of the Hand and the pen. Deep meditations in this vein, which allude to an abstraction of calligraphic theory to express the undifferentiated eternity, have been brought to our attention by Johns in his study of the *Daqā'iq al-Ḥurūf* of 'Abd al-Ra'ūf of Singkel.[51]

Calligraphy was thus, at once, the most popular and the most prestigious mode of formal writing in Islamic culture, the embodiment of high culture, and the physical vehicle of the text of the Holy Book. This aesthetic citadel resisted typography, but opened its gates to lithography.

7. *A Muslim Technology*

Lithography not only met the aesthetic demands of calligraphy, but also seemed to preserve its cultural and ritual functions. When Müteferriḳa raised his ten points in favour of printing, the ninth was that "the making of books in Arabic or in non-Arabic languages is blessed when it is done by hands of Islam. When printing is done by infidels there will be no blessing in it." This was repeated by the

[50] Graham 1987:89 and 158.
[51] Johns 1955b:68–69 and 72.

great sufi Muḥammad Ḥaqqī's tract in praise of printing 1839.[52] The desire to keep religious literature within the fold is partly explained by the belief that merit accrued from the copying of the Qur'ān, ḥadīth and poems on the Prophet.[53] Conversely, the Qur'ān can only be touched or recited by those in a state of ritual purity. The text of *Sūra* 56:79, to this effect, is commonly displayed on the front page of manuscript and printed copies of the Qur'ān alike. The copying of the Qur'anic text therefore requires the calligrapher to renew his *wuḍū'* time and time again. Herein lies a source of concern with printing: the fear that the process of printing will defile the name of God or the word of God by exposing it to some source of impurity. In Egypt in the 1830s the belief prevailed that it was forbidden to print the Qur'ān or let it pass into the hands of a Christian.[54] The notions of printing and falling under Christian control are closely linked. Typography was after all a Western invention, and had been actively used by European and Syrian Christians to print in Arabic. The complexity of the processes and the specialised skills they required ensured that when government-sponsored printing began in the Middle East, the press equipment was imported from Europe, and European supervisors or operators were employed. Müteferriḳa was himself a Hungarian seminarian who converted to Islam after being enslaved as a prisoner of war. His press was acquired in Paris. To operate it, he hired the Jewish foreman of a Hebrew printing shop in Istanbul, and brought several French compositors from Paris. The Būlāq press was the successor of Napoleon's official press, re-equipped with Italian presses, advice and training, employing Italian printers, and run by a Lebanese Christian.[55]

As if to reinforce the impression that typography was intrinsically a Christian technology, it was actively promoted by Protestant missionaries not only as the supremely effective tool of Christian proselytising, but also as an emblem of Western scientific progress.[56] The

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[52] Abdulrazak 1990:92.

[53] The benefits of copying the text of the Qur'ān are naturally the greatest: calligraphers are destined for paradise because of this work, and the pious among them would retain the wood of the pens they had used to copy the Qur'ān to use as kindling to heat the water used for their funeral ablutions. Ink washed off written fragments of Qur'anic text has healing powers (Schimmel 1984:86, 58 and 84).

[54] Lane 1836:283, Demeerseman 1954:59.

[55] Abdulrazak 1990.

[56] Once, amusingly, by the Singapore missionary Keasberry in a lithographed edition (1843). Again the complexity of the process is relevant, for typographic printing

association of government presses in Istanbul and Cairo with programs of military, administrative, and fiscal modernisation along Western lines hardly dispelled this perception. That is why, perhaps, after the Būlāq press had already been in operation for a decade, Lane could record that he was "acquainted with a bookseller here who has long been desirous of printing some books which he feels sure would bring him considerable profit, but cannot overcome his scruples as to the lawfulness of doing so."[57]

Lithography suffered from none of these associations. This cheap, accessible, and simple technology could be transparently under Muslim control.

Its simplicity was stunning. In 1806 its inventor, Senefelder, launched lithography by reproducing a note written by the crown prince of Bavaria in court before his very eyes.[58] Not fifty years later, when the first lithographic press was set up in Sumatra, its owner, Muḥammad Azharī, repeated the novelty for the visiting Dutch Assistant Resident, extemporising a poem of welcome and printing it on the spot.[59] This new technique required only the simplest of materials: grease, lampblack, water, paper, and fine limestone. Within a year or so of the first arrival of lithography in India, all requirements except paper were readily available locally. Lithographic ink was locally made, stones finer than those of Bavaria were found near Madras, and later in Sindh. Only European printing paper had to be relied upon until 1862.[60] Later in Cairo a distinctive locally-produced yellow paper gained popularity for printing copies of the Qur'ān and other religious works, perhaps as an indication that European paper was not involved.[61] Nor did skilled operators have to be imported for lithographic presses. The prime skill needed to produce good lithography is precisely the skill of the copyist or calligrapher. Indeed, the transfer of skills was so direct that in India local scribal mannerisms were carried across into lithographic imprints.[62]

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was the first mass-production technology involving a high degree of craft specialisation, and thus an outstanding instance of the division of labour, which since Adam Smith's day had been recognised in the West as the foundation of European economic strength.

[57] Lane 1836:283.

[58] Senefelder 1819:65.

[59] Dewall 1857:194.

[60] Caresajee 1958:98, Butt 1988:156.

[61] Cf. the remark of the Turkish calligrapher-historian Mustakīmzāde that neither the Qur'ān nor a *ḥadīth* should be written on *firangī* paper (Schimmel 1984:81).

[62] Diehl 1973:120 and 126; Ahmad 1985:142 and 146.

Lithography thus acted as a direct extension of the manuscript tradition. This was important for those who scrupled over the need to reproduce the Qur'ān in writing by the pen, given the Qur'ān's own references to the pen as an instrument conveying divine instruction to mankind (68:1, 96:4). Indeed, the care lavished upon lithographed Qur'ān texts tended to blur further the boundary between manual copying and lithographic printing when the customary embellishments of coloured frames and gilt verse markers were added by hand.

The simplicity and flexibility of lithography made possible printing that was patently Muslim in style and process. It resolved aesthetic and ritual concerns over the reproduction of calligraphy, and specifically of the text of the Qur'ān. It provided a credible means of reproducing the written form of the Holy Book, and all the associated items of popular calligraphy –the *basmalah*, the names of Allah, invocations, verses and extracts of special potency.

And it was just such material that had a ready-made mass market. Lithography flourished supplying it. Popular calligraphy, along with illustrations of the Ka'ba and Shī'ite portraits of 'Alī, Ḥusain, and Fāṭimah were being printed in Istanbul at least as early as 1851. (The printing of such ephemera, unfortunately, goes largely unrecorded.) They became a popular purchase for pilgrims, being sold in great numbers at Mecca.[63] Better attested are early printings of the Qur'ān. The Qur'ān or excerpts from it were regularly among the first books to be printed by private Muslim lithographers. The first Arabic language printing in Persia 1828 was a Qur'ān, lithographed in the hand of a famous calligrapher. As we have seen, the first private press in Lucknow, too, commissioned a Qur'ān selection again from an esteemed calligrapher. And in Southeast Asia, the second item of Muslim printing after a *mawlid* text recited to honour the birth of the Prophet, was again a Qur'ān.[64]

The reason, besides piety, was profit. There was a vast unmet demand for copies of the Qur'ān. Learning to recite the Qur'ān was the first stage in any Muslim child's education, and traditionally students were unlikely to have a copy of the Qur'ān to read from. They learned lines written by their teacher across the top of their slates, or worked from written fragments of the text made by the

[63] Demeerseman 1953:360.
[64] Browne 1914:8, Sharar 1975:106, Kaptein 1993, Dewall 1857.

teacher or senior pupils. Supply of printed copies of the Qur'ān for personal and educational use became a staple of the Muslim printing industry, with Bombay and Cairo eventually emerging as the major suppliers. In the early days of printing, profits could be substantial. Though lithographed copies of the Qur'ān had to be carefully prepared high-quality editions, they could command good prices because a hand-copied Qur'ān was very costly for the same reason. The Agra Qur'ān of 1850, in Arabic and Urdu, made its publisher a fortune at Rs 5 per copy.[65]

Where Muslims lived under colonial rule alongside significant non-Muslim populations, lithography took on a distinctly Muslim hue. As European printing was typographic, and most non-Muslim vernacular printing followed the European model, consistent use of lithography was a mark of Muslim culture. This pattern is strongly evident in both India and Southeast Asia.[66]

With this understanding of the printing technologies available and how they were applied, it seems less useful than ever to generalise about Islamic conservatism. The inadequacy of the technology of typography, especially in the alphabetised form in which it was accessible to Muslims, must be accepted as a significant factor in the long delay in the Muslim adoption of printing. When typographic printing was taken up by the Ottoman government in the face of growing European power, its ineptness and complexity, its Christian odour, and government direction of its uses all restricted its currency and scope. Consequently typographic printing remained marginal to the Muslim tradition and was making only slow headway when lithography burst upon the scene. However, once an appropriate technology for reproducing Arabic script became available, it was adopted rapidly. Lithography was launched in Europe only during the years 1806–1817, and reached India—as we have seen—in 1824. In that very year the first Muslim lithographic press was established. Twenty-five years later, the new technology was widely used in India and Persia, making headway in Turkey, Egypt, and the Maghrib, and about to arrive in Southeast Asia. Let us not forget either, that this new technology was not only speedily adopted, but was also raised to unprecedented levels of technical excellence in its application to book printing.[67]

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[65] Ahmad 1976:137.
[66] Proudfoot 1986:108.
[67] E.g. Sharar 1975:108.

Thus for most of the Muslim world, lithography provided the whole answer to printed book production. Only in the Middle East and the Maghrib did it flourish alongside a continuing use of typography, mainly by government presses, and here, Demeerseman argues,[68] lithography facilitated the wider acceptance of the principle of printing, and hence typographic printing as well. Thus, in different contexts across the Muslim world, lithography ushered in the print revolution.

8. *Why has Lithography been Neglected?*

If lithography was as important in early Muslim book printing as this survey suggests, then why has it continued to be overlooked? The reasons for this continuing blind spot lie both in the subsequent history of Muslim printing and in certain scholarly attitudes.

In South Asia, lithography has fully held its ground. To this day in India and Pakistan, lithography, or comparable means of reproducing handwritten script, remain the common technique for printing not only Muslim books of all kinds, but newspapers and magazines as well. Outside the sub-continent there has been a rationalisation of printing techniques: typography has largely captured the old field of the copyist and the new applications of print that have no precedent in the manuscript culture; lithography continues to serve in the field of calligrapher.

By the end of the nineteenth century periodicals and newspapers had become the leading print medium. The economics of this new genre required speedy production of large print runs, and this favoured typography. Commercial newspaper reading and government-printed school texts began to create a new literacy in typography free from manuscript antecedents. Also in the latter part of the nineteenth century, the Ottoman government's typographic presses became major printers of religious treatises in Arabic and the vernaculars. The prestige of books printed in Istanbul and above all in Mecca (after 1883) gave credibility to typography.[69] Meanwhile, in a development paralleling the early European experience of print, the graphic poverty of typography, which had at first made it a poor substitute for the manuscript style, was coming to be seen as having the virtue of

[68] Demeerseman 1954:45.
[69] Proudfoot 1993:41.

greater clarity. The advance of typography was noticed by Browne in Persia. In the passage quoted earlier he remarked upon the displacement of early typography by lithography. He then went on to point out that after fifty years of lithography, "typography again became current and popular" at the turn of the century. An analogous change took place in Southeast Asia, at about the same time, with lithography claiming a slowly dwindling audience.[70]

On the other hand, in the realm of the calligrapher, and especially in the printing of the Qur'ān, lithography gained ground and held it. When the Ottoman government allowed the printing of the Qur'ān with Turkish commentary for the first time in 1865, it was done with typography. But the same text was re-issued lithographically in 1879 and thereafter. Analogously in Cairo, early typographic editions of the Qur'ān from 1864 were succeeded in 1889 by lithographed editions. With few exceptions, the Qur'ān has ever since been printed using lithography or allied techniques.

These later developments have overshadowed the early days of printing. The familiarity of the periodical press, and the obvious importance of its impacts, make it too easy to overlook the ways and needs of earlier days, and forget that print was not at first used in this way at all.

Until very recently scholarship has done little to remove this blind spot.[71] Antiquarian bibliography, with its technical interests, and communications history, with its sociological interests, have found little to say to one another. This mismatch has not been mitigated by some prevalent perceptions of Muslim societies.

One is the tendency to base generalisations about Islam on a rather abstract and idealised version of Middle East realities. This may lead to misrepresentations. As we have seen, the history of early printing in the Middle East is not common to the societies in which a majority of Muslims lived. An antidote is to take a view closer to the ground in one place or another away from Istanbul, Mecca and Cairo. This is what makes Demeerseman's contribution to the history of Muslim printing so enriching. By using his local knowledge of Tunis, he was able to avoid some Orientalist ideal-types.

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[70] Farmayan 1968:145, Walther 1990:236, Proudfoot 1993:57.

[71] Recent doctoral studies have begun to mend the rift. Roper (1988) and Abdulrazak (1990) should be mentioned.

Running deeper is another generalisation. It is the attitude described in the opening paragraph of this essay: namely, a rather too-ready willingness to characterise Islamic societies as intrinsically conservative, or at best reactive. One can avoid the need to explain a great deal by relying on this conviction. The history of lithography in Muslim hands suggests that there may often be more to be said.

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Although I have been a student of Professor Johns and later his junior colleague, regretfully I have never had the opportunity to study Islam under him. Nevertheless, in the field of printing history—which must be tangential even to his wide-ranging interests—I have found my way lit by beacons which he has tended. These are his convictions that there are insights to be gained by "observing Islam" away from Mecca and Cairo; that a powerful source of understanding lies in the sensitive juxtaposition of Christian and Muslim experiences; and that at the heart of Muslim consciousness is the multi-faceted beauty of the Qur'ān. For these lights, I am grateful.

Bibliography

from Riddell & Street, Islam: Essays on Scripture, Thought and Society, A Festschrift in honour of Anthony H. Johns, pp.341-356

Abdulrazak, Fawzi A., (1990) "The Kingdom of the Book: the history of printing as an agency of change in Morocco between 1865 and 1912", doctoral thesis, Boston University.

Ahmad, Nazir, (1976) "Development of Printing in Urdu 1743-1857", M.Phil. thesis in the School of Library, Archive and Information Studies, University College, London.

Ahmad, Nazir, (1985) *Oriental Presses in the World*, Lahore.

Albin, M.W., (1981) "Iraq's first printed book", *Libri* 31: 167-174.

Albin, M.W., (1985) "Islamic Book History: Parameters of a Discipline", *Bulletin of the International Association of Orientalist Librarians* 26-27: 13-16.

Albin, M.W., (1988) "An Essay on Early Printing in the Islamic Lands with special relation to Egypt", *Mélanges de l'Institut dominicain d'études orientales du Caire*, 18: 335-344.

Avery, Peter, (1991) "Printing, the Press and Literature in Modern Iran", in Fisher 1968-91, vol.7 ch. 22.

Baysal, J., (1981) "Turkish Publishing Activities before and after the New Alphabet", *Anatolica* 8: 115-127.

Benjamin, S.G.W., (1887) *Persia and the Persians*, London.

Berkes, N., (1969) "Ibrāhīm Müteferri̲ka", *EI*^{2}.

Berkes, N., (1964) *The Development of Secularism in Turkey*, Montreal.

Bianchi, X., (1843) "Catalogue générale des livres arabes, persans et turcs, imprimés à Boulac", *Journal asiatique* 4/2: 24-61.

Bianchi, X., (1859-63) "Bibliographie ottomane, ou notice des ouvrages publiés dans les imprimeries turques de Constantinople, et en partie dans celle de Boulac, en Égypte, depuis les derniers mois de 1856 jusqu'à ce moment", *Journal asiatique* 5/13 (juin 1859): 519-555; 5/14 (oct-nov. 1859): 287-298; 5/16 (oct. 1860): 323-346; 6/2 (août-sept. 1863): 217-271.

Brass, P.R., (1974) *Language, Religion and Politics in North India*, Cambridge.

Browne, E.G., (1914) *The Press and Poetry of Modern Persia*, Cambridge.

Bulliet, R.W., (1987) "Medieval Arabic *Tarsh*: A Forgotten Chapter in the History of Printing", *JAOS* 107.3: 427-438.

Butt, Allah Rakhio, (1988) "The Nineteenth Century Book Trade in Sind", doctoral thesis, University of Wales, Aberystwyth.

Caresajee, Rustom, (1958) "The printing press in Bombay: 1780", in Priolkar (1958): ch. 5.

Chappell, W., (1970) *A Short History of the Printed Word*, New York.

Crabbs, J. A., Jr, (1984) *The Writing of History in Nineteenth-Century Egypt: A Study in National Transformation*, Cairo.

Davis, E., (1983) *Press and Politics in British Western Punjab 1836-1947*, Delhi.

Demeerseman, A., (1953) "Une étape importante de la culture islamique: Une parente méconnue de l'imprimerie arabe et tunisienne: La lithographie", *Institut des belles lettres arabes* [*IBLA*] 16: 347-389.

Demeerseman, A., (1954) "Une étape décisive de la culture et de la psychologie sociale islamiques: Les données de la controverse autour du problème de l'Imprimerie", *Institut des belles lettres arabes* [*IBLA*] 17: 1-48 & 113-140.

Dewall, H. von, (1857) "[Berigten:] Eene Inlandsche Drukkerij te Palembang", *Tijdschrift voor de Indische Taal- Land- en Volkenkunde uitgegeven door het Bataviaasch Genootschap van Kunsten en Wetenschappen*, deel 6 / n.s. deel 3: 193-198.

Diehl, K.S., (1973) "Lucknow Printers 1820-1850", in Gidwani (1973): 115-128.

Duda, H.W., (1935) "Das Druckwesen in der Türkei", *Gutenberg-Jahrbuch*: 226-242.

Duverdier, G., (1987) "Savary de Brèves et Ibrahim Müteferrika: Deux drogmans culturels à l'origine de l'imprimerie turque", *Bulletin du bibliophile* 1987.3: 322-359.

Ellis, N.A., (1955) "Indian Typography", in Kesavan 1955: 10-16.

Farmayan, Hafaz Farman, (1968) "The Forces of Modernization in Nineteenth Century Iran: A Historical Survey", in Polk & Chambers 1968: 119-151.

Fisher, W. B. et al., (1968-91 ed) *The Cambridge History of Iran*, Cambridge.

Gallop, A.T., (1990) "Early Malay Printing: an Introduction to the British Library Collection", *Journal of the Malaysian Branch, Royal Asiatic Society* 63.1: 85-124.

Geiss, A., (1907-08) "Histoire de l'Imprimerie en Égypte", *Bulletin de l'Institut Égyptien*, [I], sér. 5, 1: 133-152; II, sér. 5, 2: 195-220.

Gidwani, N.N., (1973 ed) *Comparative Librarianship: Essays in honour of Professor D.N. Marshall*, Delhi.

Govi, K.M., (1977) "The Genesis and Growth of India's National Bibliography", *Libri* 27.2: 165-174.

Graham, W. A., (1987) *Beyond the Written Word: Oral Aspects of Scripture in the History of Religion*, Cambridge.

Haider, Syed Jalaluddin, (1981) "Munshi Nawal Kishore (1836-1895): Mirror of Urdu Printing in British India", *Libri* 31: 227-237 = *Pakistan Library Bulletin* 12.1 (March): 12-23.

Hammam, M.Y., (1951) "History of Printing in Egypt", *Gutenberg-Jahrbuch*:156-159.

Hammer[-Purgstall], J. von, (1831) *Geschichte des Osmanischen Reiches*, Pest.

Heyworth-Dunne, J., (1940) "Printing and Translations under Muḥammad 'Alī of Egypt: the Foundations of Modern Arabic", *JRAS*: 325-349.

Hirsch, R., (1978) "Scribal Tradition and Innovation in Early Printed Books", in his *The Printed Word: Its Impact and Diffusion*, London: ch. XV.

Hitti, P.K., (1960[7]) *History of the Arabs*, London.

Hourani, C., (1982) "The Arab Typographical Revolution. The Work of Nasri Khattar", in his *The Arab Cultural Scene, A Literary Review Supplement*, London.

Hsu, H.C., (1985) "The first thirty years of Arabic printing in Egypt 1238-1267 (1822-1851). A bibliographical study with a checklist by title of Arabic printed works", doctoral thesis, Edinburgh University.

Humphries, C. & Smith, W.C., (1970) *Music Publishing in the British Isles*, Oxford.

Johns, A.H., (1955) "Dakā'ik al-Hurūf by 'Abdul Rauf of Sinkel", *JRAS* 1955: 55-73, 139-58.

Káldy-Nagy, Gy., (1974) "Beginnings of Arabic-Letter Printing in the Muslim World", in his ed. *The Muslim East: Studies in Honour of Julius Germanus*, Budapest.

Kaptein, N., (1993) "An indigenous printer in Surabaya in 1853", *Bijdragen tot de Taal- Land- en Volkenkunde*, 149.2: 356-361.

Keasberry, B.P., (1843) *Segala Jenis Hikayat Ilmu Kepandaian*, Singapore.

Kesavan, B.S., (1955 ed) *The Carey Exhibition of Early Printing and Fine Printing*, Calcutta.

Lane, E., (1836) *An account of the Manners and Customs of the Modern Egyptians written in Egypt during the years 1833-1835*, London.

Levitzion, N. & Voll J.O., (1987) *Eighteenth-Century Renewal and Reform in Islam*, Syracuse.

Mardin, Şerif, (1962) *The Genesis of Young Ottoman Thought. A Study in the Modernization of Turkish Political Ideas*, Princeton.

Medhurst, W.H., (1829) *Missionary Herald*, 25: 193.

Medhurst, W.H., (1838) *China: its State and Prospects, with special reference to the Spread of the Gospel* .., London.

Metcalf, B.D., (1982) *Islamic Revival in British India: Deoband, 1860-1900*, Princeton.

Mohl, J., (1853) "Rapport sur les travaux du Conseil de la Société asiatique, pendant l'année 1852-1853 …", *Journal asiatique* 5/2 (août): 171-172.

Oman, G, et al. (1989) "Mat̲ba'a", *EI*^{2}

Pavrey, Jal Dastur Cursetji, (1933)*Oriental Studies in honour of Cursetji Erachji Pavry*, London.

Pedersen, J., (1984) *The Arabic Book* (tr. G. French, ed. R. Hillenbrand), Princeton.

Peron, A., (1843) "Lettre sur les Écoles et l'Imprimerie du Pacha d'Égypte," *Journal asiatique* 4/2 (juli-août): 5-23.

Polak, E., (1865) *Persien. Das Land und seine Bewohner*, Leipzig.

Polk, W.R. & Chambers, R.L., (1968 eds) *Beginnings of Modernization in the Middle East*, Chicago.

Poole, H.E. & Krummel, D.W., (1980) "Printing and publishing of music" in Sadie 1980: 15.232-272.

Priolkar, A. K., (1958) *The printing press in India: Its Beginnings and Early Development*, Bombay.

Proudfoot, I., (1986) "A Formative Period in Malay Publishing", *Journal of the Malaysian Branch, Royal Asiatic Society* 59:2 : 101-132.

Proudfoot, I., (1993), *Early Malay Printed Books*, Kuala Lumpur.

Rizk, N. A., (1978) "The Book Publishing Industry in Egypt", *Library Trends* 26.4: 553-565.

Robinson, F., (1991), "Perso-Islamic Culture in India from the seventeenth to the early twentieth century", in Canfield 1991: 104-131.

Robinson, F., (1993) "Technology and Religious Change: Islam and the Impact of Print", *Modern Asian Studies* 27.1 : 229-251.

Roper, G., (1982) "Arabic Printing: Its History and Significance", *Ur* 1: 23-30.

Roper, G., (1988) "Arabic Printing in Malta 1825-1845. Its history and its place in the development of print culture in the Arab Middle East", PhD, School of Oriental Studies, University of Durham, 1988.

Rosenthal, F., (1967 tr) *The Muqaddimah of Ibn Khaldun: An Introduction to History*, ed. and abridged by N.J. Dawood, Princeton.

Sadie, S., (1980) *The New Grove Dictionary of Music and Musicians*, London.

Safadi, Yasin H., (1981) "Early Arabic Printing", *New Books Quarterly* 1.2/3: 26-29.

Schimmel, A., (1984) *Calligraphy and Islamic Culture*, New York.

Schlechta-Wssehrd, O. von, (1853-55) "Verzeichniss der in Constantinopel letzterchienenen orientalischen Drucke und Lithographien", *ZDMG* 7: 250; 9: 262, 267.

Senefelder, Alois: *A Complete Course of Lithography*, London, 1819.

Sharar, Abdul Halim (1975) *Lucknow: The Last Phase of an Oriental Culture*, tr. & ed. E.S. Harcourt & Fakhir Hussain, London.

Sprenger, A., (1844) *Catalogue of the Arabic, Persian and Hindústány manuscripts of the Libraries of the King of Oudh*, Calcutta.

Storey, C.A., (1933) "The Beginnings of Persian Printing in India", in Pavrey 1933: 457-461.

Twyman, M., (1990) *Early Lithographed Books: a study of the design and production of improper books in the age of the hand press*, London.

Verdery, R.R., (1971) "The Publications of Būlāq Press under Muḥammad 'Ali of Egypt", *JAOS* 91: 129-132.

Walther, K.K., (1990) "Die lithographische Vervielfältigung von Texten in den Ländern des Vorderen und Mittleren Orients", *Gutenberg-Jahrbuch*: 223-236.

Watt, W. M., (1988) *Islamic Fundamentalism and Modernity*, London.

Weil, G., (1907) "Die erste Drucke der Türken", *Zentralblatt für Bibliothekswesen* 24.2: 49-61.