

The Religious Roots of Communication Revolutions

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Printing is generally considered one of the most important inventions in human history. Scholars claim it helped spur the Scientific Revolution, the Industrial Revolution, The Great Divergence between Europe and Asia, the rise of mass education, nationalism, the public sphere, etc. (Anderson 2006; Baten and Zanden 2008; Eisenstein 1980; Febvre and Martin 1976; Habermas 1989; McLuhan et al. 2011; Rubin 2017; Van Zanden 2009). Most scholars focus on technology driving these changes. If they discuss religion, they often focus on printing causing religious change or religion restricting printing, e.g., Rubin (2017). Yet, in both the Asian wave (8th – 19th centuries CE) and in the European wave (1450 – the present), the earliest printed texts were religious, high demand for religious texts made printing economically viable, and religion influenced where printing spread, how it was used, and what its social impacts were.

Mahayana Buddhists, Tantric Buddhists, Christians, Jews, and Parsis typically printed shortly after learning how to print. Conversely, Muslims, Hindus, Theravada Buddhists, and others knew about printing for about a thousand years before they used it to print books. With few exceptions, prior to 1874 only Protestant missionary conversion-focused printing convinced Muslims, Hindus, and Theravada Buddhists to print.

Moreover, the social impact of printing was radically different in different religious contexts. In Tantric Buddhist societies, neither non-religious printing nor for profit printing develop before the 20th century. In Confucian/Mahayana Buddhist societies, printing and literacy expanded more broadly, but expanded slowly and remained almost entirely in a classical language (Literary Sinitic / *Wenyan*) far removed from spoken vernaculars. In Catholic societies printing spread more rapidly and shifted more quickly to non-religious and vernacular texts than in Orthodox, Buddhist, and Confucian societies. However, Protestantism and religious competition with Protestants seem to have transformed the uses and social impact of printing among Catholics, Eastern Christians, Mahayana/Tantric Buddhists, and Confucianists. Protestantism amplified a vernacular shift, accelerated printing and mass education, and birthed printed vernacular newspapers. These social ‘outcomes’ correlate far more tightly with religious differences and religious changes than with technological differences and technological changes.

In this paper, I discuss the spread and social impact of printing in the Mesopotamian, Asian, and Europe waves. To test if my causal explanations about religion and printing in Europe are robust, I compare the impact of Protestant, Catholic, and Orthodox missionaries on the spread and social impact of printing in three contexts: (1) areas without a written language, (2) areas with a written language but no pre-mission printing, and (3) areas that printed before Europe. This approach reveals how religious ideas transformed the world and undermines many currently-dominant theories about long-term economic and political change.

A Note on Methods: My global approach seems imprudent, even arrogant. I backed into it tentatively over 25 years of research. Historical research on printing is often siloed within regions and time periods, which facilitates intimacy with primary sources and contexts. However, studying how printing developed globally reveals which explanations generalize and which do not. This either strengthens or weakens theories based on narrower contexts.

I use several interlocking methods to evaluate causes. First, I use historical literature and primary sources to find *proximate* causes in each ‘country,’¹ e.g., who first introduced local-language printing, who copied them, and what spurred the diffusion? Second, I analyze which potential-causes *consistently* correlate with the beginning of indigenous printing regardless of context. Third, I compare the rise of printing across regions of the world. In each region there may be alternative explanations for why printing developed, but does the same explanation work across all contexts? Finally, I use a series of natural experiments, such as the conversion of the Uyghurs from Buddhism to Islam and the lagged printing by Chinese Muslims.

I also emphasize the causal impact of religious beliefs.² Some may object that ‘religions’ are diverse, they change, and some emphasize ritual over *articulated* beliefs. However, culture is analogous to language. Languages follow rules (e.g., grammar) even if the rules change, are partially inconsistent, and most native speakers cannot articulate them (Woodberry 1995, 2012). Because religions change, my descriptions of a religion circa 1600 CE may not reflect that religion in 2025. However, even though all religions change, not all changes are equally easy. Some changes require more reworking of the ‘internal grammar’ of a tradition, some changes cost more resources (or cost religious elites more resources), and some changes undermine the

¹ To facilitate communication with non-specialists, I use the modern names of countries.

² Also for simplicity, I often talk about religious traditions as if they are distinct and coherent. I recognize overlap between them and diversity within them and discuss this when necessary.

legitimacy/authority-structure of a tradition more (Woodberry 1995). Hopefully, how culture shapes society will become clearer as this article progresses.

Finally, it is important to differentiate types of causal reasoning. When there are multiple causes of an outcome, we use statistics. For example, on average, people who get more education get more income. Proffering examples of highly educated people with low incomes and less educated people with high incomes does not necessarily disprove a casual relationship between education and income. Counter examples may merely demonstrate that education is not the only route to greater income. Conversely, when there are few causes of an outcome, we can discuss necessary, sufficient, and conjunctural conditions. To make this type of logic manageable, comparative historians typically add ‘scope conditions,’ limiting the analysis to a small number of cases and/or a limited time period. However, adding scope conditions can hide alternative explanations. The narrower the scope conditions, the weaker the argument. In this article I use the logic of necessary and sufficient conditions over the entire world from ~2,500 BCE through the late 19th century. I recognize this sounds hubristic. However, the amazingly consistent patterns with such broad scope conditions suggest that religious ideas were crucial to the origin, spread, economic viability, uses, and social impact of printing. The few possible exceptions can be explained via secondary diffusion. Eventually, religious ideas became part of ‘world culture’ and lost their religious distinctiveness, creating the illusion that they were caused by technology or ‘modernity.’ However, tracing the process historically allows us to differentiate religious and other plausible causes.

I. Printing on Clay: The ‘Mesopotamian Wave’

Scholars typically begin print history in East Asia and only discuss the antecedents of printing in China, but the mechanical reproduction of texts began in Mesopotamia using both seals and stamped texts on clay. Stamped seals began about 7,000 years ago. Early seals were pictorial, but after the development of writing, some seals added reverse-carved texts, e.g., in the Sargonic period (2334-2154 BCE). Initially, texts were short, but they expanded until by the Kassite period (1595-1155 BCE) some included extended blessings and prayers (Tanaka 2024). Seals with text spread to the Eastern Mediterranean and Central Asia³ before Chinese began using seals in the Shang Dynasty (1600-1046 BCE) (Huang 2017:70). Some seal impressions

³ For a Bactrian seal with text circa 2200-1900 BC see <https://www.christies.com/en/lot/lot-5425490> and (Salvatori 2000).

functioned like signatures, others as amulets (Gibson and Biggs 1977:112). Conversely, stamping names on bricks seem to have been for administrative purposes (Millard 2011:468).

However, Mesopotamian rulers also ‘printed’ long texts on the bricks they used to build ziggurats – e.g., 30 lines of text. The texts informed the gods about the ruler who commissioned the temple and/or cursed anyone who tampered with it (Halla 1982:113; Suter 2010:329). The letters were reverse-carved, some incuse, others in relief (Millard 2011:468). The Cambridge University Fitzwilliam Museum has multiple examples of stamped ‘dedication-bricks’ from ~2094 BCE to ~542 BCE.⁴ Thus, Mesopotamian reverse-carved texts are both earlier and longer than any of the precursors scholars use to explain the rise of printing in East Asia. Mesopotamian printed bricks were used for construction and were not intended for people to read (Millard 2011:468). Sumerians and Babylonians wrote cuneiform texts on clay tablets, so they could have block-printed books for people, but they did not.

Perhaps copying Mesopotamians, Greeks also printed short texts on bricks using reverse-image carving. The Romans copied the Greeks, and by the 2nd Century CE, printed bricks became more complex, with multiple names and titles (Bodel 1983:1). This conferred civic honor and signified ‘brand’ quality. Thus, woodblock printing technology was known and papyrus widely available to the Greeks and Romans, but no one printed books.

From at least the 5th or 6th century CE, Buddhists began printing images and texts on clay to make merit. It’s plausible that Greeks or Romans transferred the clay-printing technique to Buddhists in South and Central Asia⁵ and/or that Taoist magical clay-stamping spread from China. Most of these clay texts are *dhārani*, magical Sanskrit incantations that promise a long

⁴ For other examples see Gabbay et al. (2013). The literature typically refers to this as ‘stamping’ rather than ‘printing,’ although the technology was comparable to later printing on paper, minus paper and ink.

⁵ Alexander the Great conquered northwest ‘India’ in 326 BCE. Indo-Greek rulers controlled parts of India and Central Asia for centuries afterward and many converted to Buddhism. Moreover, Greco-Roman trade-links remained strong for several centuries into the Common Era (Halkias 2014; Stoneman 2019). Greeks introduced coin stamping techniques to South Asia, which included stamping words (Cribb 2003). The first stamped images on clay also appear during the Hellenistic period. At least one woodblock used for clay-stamping texts survives (Lerner 2018:241, 252). Greco-Romans introduced plaster molds and mass production of molded clay objects (Brancaccio 2005; Mairs 2014). Scholars widely recognize the Greco-Roman influence on Buddhist sculpture and painting (Nehru 1989; Stewart 2024). Moreover, Greek conquests and Buddhist empires may have spurred the beginning of writing by Buddhists and Hindus (Stoneman 2019:383, 385, 392, 396, 399, 401–4, 427–60); at a minimum, “between the arrival of the Greeks and their departure, India became a literate culture” (Stoneman 2019:404). Moreover, Mahayana Buddhism developed in Greek-influenced societies in the 1st and 2nd centuries CE and shows many indicators of Greek influence (Halkias 2014:103–7; Salomon 2018:362–63), e.g., Greek deities “find their parallels in the cultic pantheon of Mahayana Buddhism,” e.g., Hercules became Vajrapani, the guardian of the Buddha (Halkias 2014:103). Thus, Mesopotamian clay-printing *may* have influenced Buddhist clay-printing via Greek or Roman conduits.

life, a better rebirth, and blessing to those who copy them and perform specific rituals. Archeologists have found *dhārani* printed on clay in multiple sites in India, Afghanistan, Sri Lanka, Thailand, Cambodia, Vietnam and Indonesia. Thus, although this practice seems Tantric/Mahayana, it was also used in Theravada Buddhist societies. Some of these clay texts are long, including the *Dhārani of Undefined Pure Light* (McBride 2005:87; Skilling 2011; Strauch 2009). However, most scholars of printing ignore ‘stamping’ on clay and begin the history of ‘printing’ in East Asia, when the *Dhārani of Undefined Pure Light* was first printed *on paper*. Still, the ‘Mesopotamian Wave’ demonstrates that it is possible to print pages of texts using woodblock technology for thousands of years in dozens of societies with little social transformation. Short texts signified ownership and provenance, longer texts communicated with the divine but were not intended for humans to read.

II. Buddhism and Printing: The ‘Asian Wave’

- A. **Printing on Paper:** Seals with Chinese characters began in the Shang Dynasty (1600-1046 BCE) and functioned like a signature to authenticate and secure property. From the 1st century CE (before the arrival of Buddhism), Taoists began using printed seals to drive off demons, heal people, and magically protect places. However, all evidence suggests the stamps were only used on peoples’ bodies or on clay (Strickmann 1993:32–33).

In the early centuries CE, Buddhism began spreading from Central Asia into China. This created intense competition, imitation, and sometimes violence; e.g., before printing developed there were already two major persecutions of Buddhism starting in 446 and 567 CE. By the 5th and 6th century CE, both Buddhist and Taoist texts describe virtually identical healing/exorcism rituals in which priests stamped the bodies of patients to drive out sickness/evil spirits. Even the procedures for making and empowering the stamps are virtually identical (Strickmann 1993:7–32). Finally, a text that *may* date from the 6th century, includes the first reference to stamping *on paper*, which the patient was supposed to swallow (Strickmann 1993:41–43).

In the early Tang Dynasty (618-907 CE), Buddhists, Taoists, and Confucianists vied for imperial patronage, with “fierce competition between Buddhists and Taoists in the field of efficacious spells” (McBride 2005:92). The Tang elite initially favored Taoism – which promised blessing and long life through elixirs and printed charms. Judging from later examples, Taoist stamps typically contained text, mirroring signature-stamps of officials. Some texts were

legible, but most used ‘heavenly script,’ talismans, or graphic seals and were not legible to the uninitiated (Huang 2018). Early Buddhist seals found in Dunhuang are similar (Huang 2017:94).

In this context, Buddhists promulgated a ‘superior spiritual technology’ for blessing and long life: *dhārani*. The *Dhārani of Undefined Pure Light (Uṣṇīṣavijayā Dhāraṇī)* was *transliterated* using Chinese characters in 704.⁶ The *sutra* that contains the *dhārani* instructs devotees to mass-reproduce the text, insert them in stupas, etc. Buddhists outside East Asia ‘stamped’ this *dhārani on clay*, but East Asian rulers began ‘printing’ it *on paper*. The earliest surviving examples are from Korea and Japan (circa 751 and 770 CE respectively), but the practice probably started in China (Barrett 2008). For the first ~100-200 years of East Asian printing (depending on the location), all surviving printed texts are *dhārani* and all were enclosed in stupas or reliquaries where no human could read them (Barrett 2008). The earliest *dhārani* were either printed by rulers worried about protecting their power or used like amulets to protect buildings and the dead (Johnston 1996:15, 48–50).

We treat *printing on paper* as special because East Asians later began printing ‘books’ designed for people to read, but shifting from clay to paper does not seem revolutionary, changing the purpose of printing does. This transition from mechanical merit production to mechanical multiplication of reading material is the true revolution. However, it happened almost 3,000 years after wood-block printing of texts began.

- B. **Printing Books:** The transition to printing *books* probably began after a major persecution of ‘foreign cults’ in 845 CE. This persecution wiped out Chinese Christianity and decimated Chinese Buddhism. Buddhists seem to have begun printing books to restore those lost in the persecution (Barrett 2005, 2012). The earliest dateable printed book is the *Diamond Sutra* (868 CE).⁷ The Confucian context may have fostered book printing as well. In most of the Buddhist world, the main competitor was Hinduism/Brahminism. Brahmin ritual specialists used secret Sanskrit incantations and rituals to manipulate spiritual power. Buddhists from Southeast Asia to Afghanistan competed with Brahmin ritual specialists using their own Sanskrit magical incantations and rituals (McBride 2005, 2011; Skilling 2011). Because the ‘Hindu’ Vedas were private and passed down orally, Buddhists did not need to create public texts to compete with

⁶ Understanding the meaning is not crucial. The ritual reproduction and *sound* of the Sanskrit unleash its spiritual power. Thus, the sounds were transliterated rather than the meaning translated (Tuladhar-Douglas 2009).

⁷ The *Diamond Sutra* contains transliterated *dhārani*, but the surrounding text was probably intended to be read. However, reading was not the only function. Reproducing sutras produced merit and created objects to worship (Tuladhar-Douglas 2009).

‘Hindus.’ However, in East Asia the main competitor was Confucianism. Confucians used publicly available texts. Thus, Buddhists needed to compete with readable texts of their own.

At any rate, the earliest books in China, Korea, and Japan are all Buddhist, mostly sutras. The Chinese also printed calendars (which had a religious function for picking auspicious dates), prayer books, and books on astrology, dream divination, and geomancy. The first printing of the Confucian Classics in China was in 953 CE, about a hundred years after Buddhists printed books. It was commissioned by the Emperor to minimize textual corruption (Johnston 1996:13–19, 30–31, 50). In Japan, a Zen monastery printed the first Confucian text in the 14th century using Literary Sinitic, about 500 years after Japanese began printing Buddhist texts (Sewell 1978:90). Printed texts were almost entirely Buddhist texts written in Literary Sinitic until Catholic missionary began printing in Japanese in the 1590s.

1. *Religion & the Early Spread of Printing*: Strikingly, religion seems to have influenced where book printing spread. In the Asian wave of printing (8th – 19th century), almost every Mahayana and Tantric Buddhist society printed books; no Theravada Buddhist society did and no non-Buddhist societies did (*see Table 1*).

Table 1: The Association between Mahayana/Tantric Buddhism and Book Printing Prior to Christian Missionary Contact			
	Mahayana/Tantric Buddhist (not in ‘Hindu’ Context)	Mahayana/Tantric Buddhist (in ‘Hindu’ Context)	Others (Excluding Christians and Jews)
Printed books before Arrival of Christian Missionaries	Chinese, Koreans, Japanese, Vietnamese, Jurchen, Tibetans, Tangut, Khitan, Mongols, Manchus, Bhutanese, Ladakhi (?), Buddhist Uyghurs	None	None
Did Not Print before Arrival of Christian Missionaries	Small, nomadic, & recently converted non-imperial groups.	Tantric Buddhists in Kashmir, North India, Southeast Asia and Indonesian, Pakistan & Afghanistan	All

Brahminism seems to have been an additional barrier to printing. For hundreds of years after the invention of East Asian printing, both Tantric and Mahayana Buddhist communities existed in areas of South and Southeast Asia that had Brahminic elites (Bronkhorst 2011). However, we have no evidence that they printed anything other than *dhāraṇi* and votive images

on clay.⁸ Similarly, even Theravada Buddhist societies in Southeast Asia had Brahmin ritual experts and did not print. In non-Hindu areas, only small Mahayana/Tantric Buddhist societies that never administered a significant geographic area did not print, i.e., the Bunan, Manchand, Tinan, and Kinnauri never wrote or printed their own language prior to the arrival of Protestant missionaries (Beszterda 2014:186–87, 217–25).

Why did book printing only spread to Mahayana and Tantric Buddhist societies without a Brahmin elite? It was not because of low religious competition. In Southeast Asia, Theravada Buddhists, Tantric/ Mahayana Buddhists, Hindus, and Muslims competed (Manguin, Mani, and Wade 2011), but only Mahayana Buddhists in northern Vietnam (which had a Confucian, non-Brahmin elite) printed. In South Asia, Hindus, Jains, Muslims, and various Buddhist groups competed, but no one printed. In Central Asia and the Middle East, Muslims converted Christians, Buddhists, Zoroastrians, and Hindus, but only Buddhists printed books.

It was also not because of lack of technical knowhow. Many societies copied papermaking from China and used woodblocks to print on cloth (Bloom 2001; Riello 2013). In 1307 a Muslim scholar wrote the earliest accurate description of woodblock book-printing (Allsen 2001:177–80). Moreover, Muslims used woodblocks to print paper money, book covers, amulets, and hajj certificates. Amulets and hajj certificates included long quotations from the Quran in Arabic. Examples survive from Persia, Syria, Iraq, Turkey, Egypt, North Africa, and Spain from the 800s through the 1300s,⁹ so block-printing was neither isolated nor short-lived. Some amulets were designed for the inexpensive mass market; other amulets and hajj certificates used multiple colors and had beautiful calligraphy. This high quality printing was designed for elite Muslims. Thus, book owners were aware of the technology (Aksoy and Milstein 2000; D'Ottone Rambach 2020; Schaefer 2006). Still, Muslims did not print books prior to contact with European Christian missionaries, even in China.

Similarly, Asian Hindus, Muslims, and Theravada Buddhists had extensive contact with China. There were significant, long-lived Chinese trading communities throughout Southeast Asia and a short-lived community in southern India. Southeast Asians sent regular embassies to

⁸ Brahmins were averse to paper. Central Asian paper was made from rags and Brahmins feared rags may have touched low-caste people. Thus, 'Hindus' rejected paper until after the Muslim conquests (Bloom 2001:41–42; Gupta 2013:554). In 'Hindu-majority' contexts (other than Nepal), Buddhists did not use paper either. Muslims introduced paper in South Asia, but Buddhism disappeared shortly after the Muslim conquests.

⁹ The Chinese and Koreans banned private trade and expelled coastal Muslim trading communities in the late 1300s (Siu 2022). This may have cut off the supply of woodblock printers to the Muslim world, ending the practice.

China. Indian scholars helped correct and translate texts in the Tangut, Mongol/Yuan, and Tibetan empires, where they would have seen book printing. One Indian scholar even lived in Dunhuang, the monastery in Western China where the earliest printed books were discovered. Expatriate Muslim and Hindu trading communities in China were large and sustained enough to build many mosques and a Hindu Temple (Chaffee 2018; Kulke, Kesavapany, and Sakhuja 2009; Pollock 2016:86–87; Sen 2014, 2017). Moreover, Buddhists throughout Asia initially printed *dhārani on clay*, including in Theravada Buddhist areas of Southeast Asia and Sri Lanka. Yet, despite hundreds of years of exposure to printing technology, no Hindu, Theravada Buddhist, or Muslim society printed books, including those who lived in China and Tibet.

Even within the same ethnic group, Mahayana/Tantric Buddhists printed and others did not. For example, Mongols who converted to Buddhism printed books, while Mongols who converted to Islam did not (Allsen 2001; Kara 2005). Similarly, in the mid-14th century, Uyghurs converted from Buddhism, Christianity, and Manichaeism to Islam. Uyghur Buddhists printed; Uyghur Muslims stopped. Uyghurs did not print again until the early 20th century, when Protestant missionaries and a Muslim pilgrim returning from the hajj reintroduced it (Bellér-Hann, Schlyter, and Sugawara 2016; Lipman 1997; Yakup 2016). This stoppage was not because the script became more complicated, the number of copyists increased, an Ottoman Sultan made a decree, or Uyghurs forgot how to use woodblocks. For some reason what was once religiously valuable, was no longer valuable.

Why was printing both conceivable and appealing to Tantric/Mahayana Buddhists, but not to others? Why did the transition from magical printing to ‘for-reading’ printing seem plausible and necessary for Tantric and Mahayana Buddhists? Why did Confucianists and Taoists eventually copy Buddhists – although after a significant delay? Conversely, why did Muslims in China, Tibet, Korea, Mongolia, and Central Asia decide not to print?

2. *Religion & Early Uses of Printing*: Religion also influenced how societies used printing. The earliest printed texts served ritual purposes (Barrett 2001, 2008; Wilkinson 2018:1030). It took generations for East Asians to print either non-Buddhist texts or books designed to be read. It also took hundreds of years to shift from imperial and monastic printing to for-profit printing.

Non-Confucian/Tantric Buddhist societies like Tibet, Bhutan, and Mongolia, printed before Europe did, but printing remained Buddhist and had less economic and social impact than elsewhere (Bray 1988; Diemberger, Ehrhard, and Kornicki 2016; Elverskog 2016; Kiripolská

1996). Tibet and Bhutan did *not* print either non-Buddhist or secular texts until the 20th century. Printing remained tied to religious-merit making,¹⁰ was intended for limited circulation, and was written in a distinct language that took years to learn. Printed texts were donated, not sold, because receiving payment prevented the accrual of spiritual merit. Thus, no commercial printing developed until after the 1950s (Shakya 2004:17, 38–40, 48–55, 60–62; Willock 2016).¹¹ Yet, printing was so religiously important that Ladakhis and Tibetans imported wood to make woodblocks from across the Himalayas and even nomadic Tantric Buddhists transported printing technology with them as they followed their herds (Kara 2005).

Tantric Buddhists knew about secular and for-profit printing. When Mongols controlled China during the Yuan Dynasty (1279–1368), they instituted Confucian exams and sponsored secular and Confucian printing. However, for 555 years after the Mongols stopped ruling China, they ‘reverted’ to the Tantric Buddhist pattern - printing Buddhist texts in Buddhist monasteries and circulating non-Buddhist texts as manuscripts (Kara 2005:285; Riftin 2013:132–33).¹²

Conversely, Confucian societies (i.e., China, Korea, Japan, and Vietnam) printed non-Buddhist, secular, Confucian, Daoist, and folk religious texts (McDermott and Burke 2015; Wilkinson 2018:1030–39). Typically, the emperor or shogun facilitated the transition to printing non-Buddhist texts (Kornicki 2013; McKillop 2013; Wolff 1978). Yet even imperial printing had a religious/legitimizing function.¹³

The Confucian exam system expanded literacy; even those who failed the exams learned to read some characters (Wilkinson 2018:313–23). The exams also fostered private and for-profit printing. Yet, both the exam system and the rigidity of the class structure varied by country, and this probably influenced the prevalence of private and for-profit printing. In China, the exam was open to merchants and artisans. Thus, wealthy families financed Confucian education for their sons and tried to buy more exam material than the state provided. This forced an end to the imperial monopoly on Confucian texts in 1064 CE and fostered private and for-profit printing. In Korea, up to ~1600 the government forbade children and grandchildren of merchants, artisans,

¹⁰ Printing’s merit-making function is clear in practices like printing Buddhist texts on water (Schaeffer 2009:5–6). In this context, I count medical and astrological texts as religious because both were pervaded with religious content.

¹¹ Protestant missionaries and Tibetan Christian converts like Gergan Tharchin were the first to print non-Buddhist books, secular books, text books, newspapers, books written closer to the spoken vernacular, books designed for mass circulation, and books using modern printing technology. They were also the first to sell books (*ibid.*).

¹² Until 1923 secular Mongolian texts were only printed in Beijing by Chinese, not by Mongolians (*ibid.*).

¹³ When the Mongols invaded Korea, the Korean emperor funded the carving and printing of the entire Mahayana Tripitaka (over 80,000 woodblocks) hoping the accumulated merit would help expel the invaders (McCloy 1978:99–100). Calendars listed auspicious and inauspicious dates and reflected the Emperor’s role as the ‘Son of Heaven.’

slaves, etc., from taking the exam. After 1600, the government introduced even more restrictions (Ch'oe 1974). Thus, wealthy merchants had no incentive to fund Confucian printing and the government dominated printing until Protestant missionaries arrived in the late 19th century. In Japan, the state never used the Confucian exam system to allocate government positions. This may have delayed Japan's transition to non-Buddhist printing, but freed wealthy merchants and artisans to fund a far more diverse effervescence of printing once non-Buddhist printing began.¹⁴

Lack of Confucian exams may have fostered openness to European influence. Unlike other East Asian elites, Japanese elites did not need to preserve Confucian knowledge to justify their status. Thus, compared to Korea, Vietnam, and China, Japan (1) used phonetic scripts more pervasively prior to the late 19th-century, (2) continually monitored Western technical developments during the period when all four societies excluded Europeans, and (3) adapted Western technology and technical terms more rapidly. Thus, the Japanese copied and integrated Western ideas, science, and technology earlier than other Mahayana/Confucian societies and dominated their former mentors in Korea and China during the late 19th and early 20th centuries.

3. Religion & the Vernacular: Confucianism and Chinese Buddhism anchored writing and education to language distant from spoken language (Literary Sinitic/*Wenyan*).¹⁵ Understanding *Wenyan* conferred status and opened access to prestigious and profitable government positions. Wealthy families attempted privilege their sons by financing their studying of the classics; this took years and was beyond the means of most poor people. There was little effort by elites to make reading and writing (and thus access to elite status) more accessible.

Wenyan was so prestigious that before the 20th century most texts were never translated into Japanese, Korean, or Vietnamese, even if the text was originally translated into *Wenyan*. Moreover, these societies typically wrote either in *Wenyan* or using Sinitic characters to represent their language. Both Mandarin and *Wenyan* have different grammar, vocabulary, and word orders than Japanese, Korean, and Vietnamese. Thus, Sinicized Japanese, Korean, and Vietnamese are extremely difficult to read. 'Chinese' follows a subject-verb-object (SVO) word order, whereas Japanese and Korean typically use a SOV or OSV word order. Moreover,

¹⁴ It took Japanese about 200 years to print texts intended to be read and about 800 years to print non-Buddhist texts in Japanese (Kornicki 2000:122–27, 2013:609). Buddhist monks printed several poems and medical texts in Literary Sinitic/*Wenyan*, but Catholic missionaries printed the first secular texts in Japanese, the first Japanese literature, and the first book printed in a Japanese phonetic writing system (Kornicki 2004; Sasaki 2022).

¹⁵ The Confucian classics were written before 221 BCE in a formal, abbreviated language that was probably never spoken. Many words have identical pronunciation, so it is necessary to see the characters to interpret the meaning.

‘Chinese’ has no verb tenses or cases, while both Korean and Japanese do. Tenses, cases, particles, etc., are lost when either language is written using Sinitic characters. Thus, to learn to read, Japanese, Koreans and Vietnamese had to first learn *Wenyan*.

Non-Chinese developed phonetic writing systems and a complicated system of marks to aid pronunciation, indicate grammatical particles, or adjust word order. Non-Chinese could have written their languages phonetically. This would have made reading and writing much easier. But Confucian elites denigrated syllabaries as too easy and called them ‘women’s language’ or ‘barbarian.’ Thus, phonetic writing was seldom used and almost never printed outside of Christian circles until the early 20th century (Gottlieb 2018; Igunma 2013; Kornicki 2009, 2014, 2018; McKillop 2013).¹⁶ Some vernacular writing existed; some of it even used phonetic scripts or a mixture of phonetic and Sinitic characters, but almost none of it was printed (Kornicki 2004, 2009). The dominant language of literature remained Literary Sinitic. The ‘vernacular revolution’ happened much later.

Thus in the Asian wave, religion influenced printing’s origin, spread, uses, and social consequences. Moreover, the patterns are consistent, only Tantric and Mahayana Buddhist societies that did not have Brahmin elites printed books, and only Mahayana Buddhist/Confucian societies printed secular books. Using block printing and paper did not imply printing books, printing books did not imply secular books, newspapers, mass education, nationalism, or a shift in writing towards the vernacular. Developing moveable font type did not foster use of phonetic writing systems, even when phonetic writing systems existed. Next, we analyze the European wave of printing to see if religious explanations work comparably well.

III. Judeo-Christian Printing: The ‘European Wave’

- A. Religion & the Rebirth of Printing:** Religion also shaped the European wave of printing (1450 – present). Almost every Christian and Jewish society printed shortly after exposure to printing (Suarez and Woudhuysen 2013). Even Christians and Jews in Muslim- and Hindu-majority societies printed (Aslanian 2014; Hanebutt-Benz, Glass, and Roper 2002; Nassi 2001; Thomas 2015).¹⁷ No non-Judeo-Christian group copied them for hundreds of years. Why were Christians and Jews interested in printing? Perhaps because both have long, non-poetic scriptures, complex

¹⁶ Aristocratic women in Korea and Japan used phonetic scripts. Some popular Buddhist texts intended for a lay audience and some popular novels used vernacular language and phonetic scripts. However, these texts were almost never printed. Before 1880, one of the few texts printed in Korean using phonetic script (Hangul) was Confucian advice to women advocating submission to husbands (Kornicki 2009:53). The few texts printed in Chinese ‘dialects’ are mostly songs and popular theater scripts (Chia 2011; Kornicki 2009).

liturgies, and lectionaries that mandate which texts to read each week. All are difficult to memorize. This complexity made book-access vital for each synagogue and parish.

The majority of early printing in Judeo-Christian societies was religious, regardless of country or region. Moreover, short religious texts such as prayer books and indulgencies made printing profitable (Erler 2014; Stallybrass 2007). These short texts helped fund the prestige projects like polyglot Bibles and the Greek/Latin Classics. Thus, religion influenced whether people printed, what they printed, and how they printed. The same printing technology was used across Europe and it remained virtually unchanged from 1450 to the early 1800s. The consistent technology helps reveal religion's impact.

1. Quantity and Language of Printing: Religion seems to have influenced the amount societies printed. Even before the Reformation, printing spread faster in Catholic areas than in Orthodox and Buddhist/Confucian areas, i.e., the number of printing centers, the number of books, the number of titles, and the transition to for-profit printing all occurred sooner. Catholic areas quickly printed both secular and vernacular texts - as opposed to Latin, *Wenyan*, etc.

Protestants further accelerated printing, mass education, and vernacularization. I do not wish to overstate distinctions or homogenize either group. Both were diverse and overlapped.¹⁸ Still, there were mean/average differences between them: Protestants de-emphasized the authority of tradition and sacraments and emphasized the final authority the Bible. Protestants believed that everyone needed access to the Bible in language they could understand. Increasingly, this implied everyone needed to be literate and able to afford a Bible in their mother tongue. Thus, Protestants expanded formal education in the vernacular, increased the supply of books in the vernacular, and industrialized the process of printing so that books were

¹⁷ Jews first printed in Ottoman Turkey (1493), Morocco (1516), Egypt (1557), Israel/Palestine (~1577), Syria (1605), Tunisia (1768), etc. (Ben Naeh 2001; Rowland-Smith 1989:16). Armenian Christians printed in Ottoman Turkey (1567), Persia (1638), and India (1772) (Pehlivanian 2002:56, 76). Many other Eastern Christian groups printed in the Muslim world, but this should suffice to make the point.

¹⁸ Some Catholics advocated vernacular Bible reading (e.g., Erasmus) and the Catholic Church never universally banned vernacular Bible translations (bans varied by region). Before the Reformation, vernacular Bibles were allowed in northern Italy, Germany, and the Low Countries. After the Reformation, vernacular Bibles were allowed where Protestantism thrived: the UK, Germany, Netherlands, etc. However, the Catholic Church tried to constrain who had access to vernacular Bibles and how they interpreted them (Agten and François 2018; François 2018).

The emphasis on vernacular Bible reading varied some between Protestants. Initially, there were not resources for mass education, and some Protestant princes feared the political consequences of teaching peasants and laborers to write (i.e., in Sweden). State Lutheran societies initially focused more on vernacular catechisms and vernacular Bible stories than on direct Bible reading. However, the emphasis on lay vernacular Bible reading was greater in Protestant societies than Catholic societies and greater for Calvinists, Pietists, and non-Conformists than for non-Pietist State-Church Lutherans and non-Evangelical Anglicans.

affordable, especially for non-state and conversionary Protestants. I lack space for a detailed history of this process, but there are many indicators of this Protestant ‘vernacular revolution.’

Before the Reformation, northern Italy, southern Germany, and France had the largest printing industries, whereas England, Scotland, Switzerland, and Scandinavia had little. After the Reformation, printing shifted rapidly from Catholic to Protestant areas (Eisenstein 1980:312–452; Febvre and Martin 1976:287–319; Graff 1987:112–19; Melton 2001). In Germany, roughly 90% of pamphlets were printed by Protestants. And because they were short, in German, and inexpensive, they helped create a new reading public (Pettegree 2014:69). Moreover, printing co-varied with the strength of Protestantism. In Hungary, the Czech Republic, Slovakia, and Poland printing surged with the spread of Protestantism and declined when the Habsburgs reimposed Catholicism (Guzner 2013; Pavlik 2013; Špániová 2021; Zmroczek 2013).

Religious competition also influenced Catholic and Orthodox printing more than Protestant printing. In both Protestant-dominated societies and societies where Protestants and Catholics competed, printing expanded rapidly. Conversely, in Catholic and Orthodox societies with little Protestant competition, printing expanded slowly (Suarez and Woudhuysen 2013).¹⁹ In the Papal States, both literacy and demand for books was so low that even in the 1860s, the region could not sustain mechanized paper making, handmade paper remained the norm (Gargaro et al. 2019:145–47). The Papal States were directly under Church control, thus secular rulers did not prevent mass education and printing there. Conversely, in Protestant ‘theocracies,’ printing and newspapers thrived, i.e., Geneva, Puritan New England, Interregnum England, and Scotland. In fact, during the English Civil War and Interregnum (1640-1660), England experienced an explosion of printing and the emergence of English newspapers. The British Library has over 22,000 distinct printed items from this 20 year period – far more than before or immediately afterwards (Murphy 2010:293–94).

2. Religion & the Consequences of Printing: Religion seems to have influenced the consequences of printing. Protestants printed a higher proportion of texts in the vernacular, expanded education and literacy more quickly, spread libraries open to the public, and printed more in minority languages (e.g., Welsh, Manx, Gaelic, and Irish).²⁰ However, to save space, I focus on the origin

¹⁹ Suarez and Woudhuysen do not make this argument, but it is clear in the chapters about individual countries.

²⁰ ‘Minority languages’ are the languages of people not in power. In the UK, the language of power is English and in France, French. Both societies had minority languages, but Protestants were more likely to print in these languages. On Protestantism and the rise of mass education in Europe see (Graff 1987:11–14, 115–25, 135–37, 147–48, 151–52, 174–84, 190–92, 230–31, 244–50, 262, 266–78, 292–93.; Johansson 1977; Vincent 2000:28–32). On

and spread of newspapers. I refer to state-sponsored periodicals as ‘gazettes’ and news-containing periodicals not published by the state as ‘newspapers.’ The link between Protestantism and newspapers is less intuitive than the link with mass literacy, etc., but the rise of newspaper is concrete and dateable across the world. Comparative literacy data is less trustworthy, especially prior to the mid-20th century. In addition, newspapers are central to theories about the rise of nationalism, civil society, the public sphere, and democracy, i.e., Benedict Anderson, Habermas, etc.

Printed vernacular pamphlets by Luther and other Reformers were so popular they created a new market for short, inexpensive, regularly available, vernacular texts. During the religious wars after the Reformation, activist Protestants wanted news about co-religionists. The far-away outcomes of battles and conversions of princes had local relevance. Thus, religious ‘imagined communities’ developed earlier than national ‘imagined communities.’ The first newspaper was printed in 1605 in Strasbourg, a major Calvinist center.²¹ From there, newspapers spread disproportionately to Protestant areas – particularly Germany, the Netherlands, and England. The earliest newspapers even copied the cover designs of Luther’s pamphlets (*Flugschriften*). Moreover, activist Protestants disproportionately published and read these newspapers (Blühm and Gebhardt 1987; Bösch 2022:41–43; Leth 1993; Melton 2001; Pettegree 2014:67–75, 2015:336–38; Zaret 2000).

Multiple independent newspapers flourished in areas with Protestant popular movements or where Protestants and Catholics competed, e.g., the Dutch had 140 newspapers before 1626 (Oram 1983:21).²² Similarly, Calvinists and non-conformists in the English Civil War and Interregnum (1640-1660) published dozens of newspapers, making English news media “the most powerful in Europe” and birthing a public sphere before Habermas’s coffeeshops opened (Bösch 2022:43, 45, 59; Calhoun 2011; Zaret 2000). However, in Catholic Europe, newspapers developed more slowly and often consisted of a single state-sponsored gazette (Bösch 2022:41–

conversionary Protestantism and rise of mass printing, see (Batalden, Cann, and Dean 2004; Fea 2016; Howsam 1991; Nord 2004; Schantz 1997); on Protestantism public-facing libraries, see (Bösch 2022:60–61).

²¹ Princes and wealthy merchants already had access to *manuscript* newsletters, but these were extremely expensive.

²² State-led Reformations in Scandinavia promoted mass literacy, but not writing, and restricted newspapers.

60; Hallewell 1982:13; Pettegree 2014:70–75, 182–248).²³ In Portugal, there was almost no periodical press until the 19th century (de Sousa and Veloso 1987:33).

Religious differences in the consequences of printing are even stronger in Eastern Orthodox areas. Most Orthodox societies had printing presses within 100 years of Gutenberg. The first book was printed in Croatia in 1494, in Romania in 1508, in Bosnian 1519, Serbia 1537, Russia 1553, etc. But Orthodox printing did not radically alter the number of books. Few titles were printed, print runs were small, and texts were disproportionately in liturgical languages, e.g., Church Slavonic. Most people remained illiterate, most of the social reforms attributed to printing in Western Europe did not occur until centuries later, and newspapers did not develop until centuries after Western Europe (Feodorov 2013; Marker 1982; Rogatchevskaia and Vraneš 2013; Thomas 2013).²⁴ The main exception is Romanian – an area where Protestants and Orthodox competed until the Catholic Habsburg’s reconquest. In Romania, there was substantial vernacular publishing in the 17th and 18th century (Feodorov 2013:235–39).

Limited printing in Orthodox areas was *not* caused by (Muslim) Ottoman or Persian occupation. Orthodox societies *outside* Muslim Empires acted similarly to Orthodox communities *inside* these Empires, and neither empire restricted printing by Eastern Christians. This pattern was not caused by a lack of religious competition; Muslims and Catholics tried to convert Orthodox Christians. However, after Habsburg military victories in Central Europe, most Orthodox areas were isolated from active Protestant competition.

Similarly, Jews and Eastern Christians in the Ottoman Empire, Persian Empire, and Indian subcontinent printed, but printed small numbers of texts relative to the size of their populations. For example, Jews in the Ottoman Empire printed 714 titles in ~450 years (1493-1940). Most were religious works (Ben Naeh 2001; Landau 2014). Most Eastern Christians initially printed with either the assistance of, or in response to, Catholic missions, but mostly printed small

²³ We see a similar pattern in the Americas. Printing began in Latin America in 1544, before settlers arrived in North America, but languished there. In North America printing flourished in areas that were settled for religious reasons (e.g., New England), but not in states founded for economic reasons (the South). The American newspaper was birthed in Puritan Boston. By 1741, Boston had 5 newspapers, whereas all of Central and South America had one gazette: the official *Gazeta de Mexico* (Hallewell 1982:13), and the rise of North American newspapers and mass media are closely linked to Protestant evangelistic movements (Fea 2016; Nord 1984, 2004; Williams 2000).

²⁴ In Russia, the Protestant-initiated Russian Bible Society (1812-1826) pioneered mass printing and printed the first vernacular Bible translations. However, Bibles translated from Greek and Hebrew threatened the authority of Church Slavonic, so the Russian Orthodox Church pressured the Tsar to shut down the Bible Society (Batalden 2004). Protestant and sectarian movements in 19th-century Russia and Ukraine also lead to the spread of peasant literacy and book ownership (Zhuk 2004). Protestants pioneered printing vernacular Bible translations in almost every Slavic language, i.e., Bulgarian, Russian, Serbian/Croatian, Slovakian, Slovenian, Upper & Lower Wendish. (Darlow and Moule 1911:162–68, 1349–50, 1388, 1399, 1413–14, 1423, 1687–93).

numbers of religious texts designed to be used by clergy or to preserve their heritage (Coakley 2002; Pehlivanian 2002). Only after Protestant missionaries arrived in the 19th century did mass printing, newspapers, and mass education develop.

3. Religion & the Spread of European Printing: Initially, European printing only spread to co-religionists. Until the 18th century, no other religious community copied Christians and Jews, other than a spurt of printing by Chinese Muslims in response to Catholic missions in the 1600s (Benite 2012; Petersen 2006; Weil 2016).²⁵ Again, Muslim, Hindu, and Theravada Buddhist societies throughout Asia and North Africa were repeatedly exposed to printing for hundreds of years by Catholic missionaries, Jews, Eastern Christians, and European trading companies, and by delegations they sent to Europe.

Muslims, etc., were also exposed to printing in multiple contexts: in societies with Muslim rulers and societies with non-Muslim rulers; in religiously diverse societies and religiously homogenous ones; in politically stable societies and in conflictual ones. Some rulers were presented printing presses with vernacular fonts, but neither used nor showed interest in them (Bloom 2001:221; Gupta and Chakravorty 2004a:11). Their consistent indifference to printing regardless of contexts undermines many scholars' explanations for printing's delay. However, before we discuss printing in non-European contexts, it is important to discuss language.

- B. Sacred, Imperial, & Vernacular Languages**: The Asian and European waves reveal four types of language: 'Sacred language' (the language of the liturgy, religious hierarchy, and/or original religious text), 'Imperial language' or 'court language' (the language of the dominant elite and/or artistic writing and communication between courts), 'Vernacular language' (language understandable to ordinary people without special training), and 'Minority language' (a vernacular language spoken by a non-dominant group).²⁶

Most religions establish a 'sacred language' for liturgy and/or sacred texts that allows religious elites to communicate with each other. Sacred languages often have both a religiously-

²⁵ Muslims were in contact with China from the mid-600s onward and were widespread in China from the Yuan Dynasty (1200s) onward. Some Muslims occupied elite positions in Chinese society as purveyors of Islamicate science and math. They worked at the astronomical observatory and were responsible to help construct the official calendar. Jesuit missionaries replaced Muslims in these positions, which spurred a Muslim reaction in print. However, when China expelled most Catholic missionaries, Muslim printing declined, only to reemerge in the late 19th and early 20th century – in a context of competition with Protestant missions.

²⁶ I know the research about the 'Sanskrit cosmopolis,' 'Persian cosmopolis,' etc. (Green 2019; Pollock 2009), but am purposely avoiding the technical vocabulary and complexities of this literature. For a balanced assessment see (Bronkhorst 2011; King 2023).

linked writing system and a religiously-linked book form (scroll, codex, *pothi*, butterfly, or accordion books). Christians pioneered the codex (the currently dominant book form); Jews use Torah scrolls (the pre-Christian Mediterranean book form); Hindus, Tantric Buddhists, and Theravada Buddhists used the palm-leaf form (*pothi*), often even after the transition to paper (Hall 2004; Hudson 1992:40–41; Schaeffer 2009). When religions spread, they usually also spread their language, writing, and book form, replacing earlier forms.

Similarly, most empires had an ‘imperial language’ and writing system. When empires spread, they spread their imperial language. Conquered peoples learned the language to get senior positions. Sometimes, the imperial language and sacred language were the same (e.g., *Wenyan* or Arabic); other times, they were different (e.g., Latin and French). It is in the interest of religious and political elites to have others learn their language. Often, imperial/sacred languages replaced earlier languages and writing systems, e.g., the Western Muslim empire replaced the diverse languages and ancient writing systems of North Africa, Syria, and Iraq with Arabic. The Chinese promulgated a *writing system*, not a spoken language. Elites *spoke* their own languages, but they *wrote* in *Wenyan*.

Some religious traditions have a countervailing impulse to translate/incarnate the meaning of religious texts in other languages and cultures. One indicator of this ‘vernacular impulse’ is if missionaries translated texts and liturgies into new languages. Another indicator is if missionaries used pre-existing writing systems or replaced them. In most traditions, the ‘sacred/imperial impulse’ overwhelmed the ‘translation impulse.’ Initially, Buddhists and Christians translated their scriptures into many languages (Bronkhorst 2014). However, translation stopped when liturgies and hierarchies crystalized around languages like Latin, Armenian, Coptic, Church Slavonic, Syriac, *Ge’ez*, Sanskrit, *Pāli*, Classical Tibetan, *Wenyan*. Neither Jesus nor Buddha spoke these languages; the earliest ‘texts’ were already translated into literary *koine* (Salomon 2018:362–65; Tuladhar-Douglas 2009).²⁷ Yet, the language of the liturgy and religious hierarchy trumped even the language of the earliest texts.

Before competing with Protestant missions, other traditions almost never translated core religious texts: i.e., Muslims, Brahmins, and Theravada Buddhists.²⁸ Theological and political

²⁷ The Buddha was from *northeastern* South Asia; *Pāli* is a *western* literary Prakrit (Sanskrit derived language) used for the Theravada canon. It may never have been a spoken vernacular. However, these literary translations were passed down orally for hundreds of years before being written down (Bronkhorst 2014; Salomon 2018).

²⁸ There were interlinear translations of the Quran into Persian prior to contact with Protestant missionaries, but translations were rare and interlinear translations highlighted the linguistic hierarchy (Zadeh 2012).

reasons may explain this resistance. In orthodox Muslim theology, God (via the angel Gabriel) dictated the Quran to Mohammad in Arabic; it is God's eternal Word.²⁹ Traditionally, Brahmins believed Sanskrit is eternal, 'the only correct language,' and the language of the gods (*daivī vāk*). Thus, preserving the original sound is vital (Bronkhorst and Mishra 1993:1–2). Similarly, Theravada Buddhists believed *Pāli* was the original and natural language from which all other languages derived (Bronkhorst and Mishra 1993:2). Many also believed it was the language of Gautama Buddha, although *Pāli* is a liturgical language that developed later (Bronkhorst 2014; Salomon 2006:351; Shulman 2021; Tuladhar-Douglas 2009). All three traditions also spread in the context of empire and elite formation.

Protestantism developed within a 'translatable religion' after the diffusion of printing;³⁰ but Protestantism transformed both the concept of 'sacred language' and how printing was used. For Protestants, the 'sacred language' was *translation* – incarnating the meaning of the Bible into languages ordinary people could understand. If a Bible's language or writing system hampered understanding, then it *should* be changed. This 'vernacular imperative' instigated a 'vernacular revolution.' Printing may have enabled this 'vernacular revolution,' but Protestant theology transformed how printing was used, how education was conducted, and who books were for.

Of course, Protestants had imperial languages (e.g., English) and semi-sacred languages (e.g., the English of the King James Version), but their 'translation impulse' fought against language hegemony. Thus, Protestants translated Bibles and educational materials into minority languages (e.g., Welsh, Gaelic, Manx and Irish), which was against the language-interests of the English ruling elite. Conversely, 'Catholic' France suppressed minority languages. Similarly, 'Catholic' colonizers (i.e., France, Spain, Portugal, Italy, and Belgium) consistently restricted education and printing in local vernaculars. 'Protestant' colonizers (i.e., England, Netherlands,

²⁹ For Muslims, God sent a book; for Christians, God sent a person, Jesus – i.e., God's self, incarnated in a particular language and culture. Orthodox Protestants believe the New Testament gives accurate knowledge of Jesus and his message, but the Bible is not God's eternal Word/Logos/Wisdom; Jesus is (John 1: 1-5; Proverbs 8:22-31; Genesis 1:1-3). Moreover, Jesus spoke in Hebrew and Aramaic, not Greek. Thus, the words of Jesus in the Gospels are already translations. Consequently, translating the testimony to Jesus is less presumptuous than translating God's dictated and eternal Word: the Arabic Quran. Thus, Muslims typically refer to Quranic translations as 'interpretations,' whereas for Christians the distinction is less sharp.

³⁰ Because Protestantism developed after the printing press, Protestants could develop theology around widespread access to books. Other theologies and practices developed around limited access to books. But Protestant theology also mattered. New schools of Buddhism and neo-Confucianism (*Daoxue*) developed *after* printing, and did not transform how printing was used. New Catholic religious orders developed *after* printing and did not either. Moreover, religious traditions change over time. When competing with Protestants, others translated and printed widely. Vatican II (1962-1965) removed any remaining Catholic barriers to vernacular Bible reading, mass vernacular education, etc. but printing did not cause Vatican II.

Denmark, the US, Australia, New Zealand, South Africa) were not able to.³¹ Catholic and Orthodox missionaries also favored both imperial/sacred languages and scripts more than Protestant missionaries. In this regard, Catholic missionaries and ‘Catholic’ empires were not radically different from earlier missionaries and empires. Protestants were the odd ones. However, these are broad generalizations. It is better to show these patterns historically.

C. The Spread of Printing Via Protestant, Catholic, and Eastern Orthodox Missions:

Religion seems to have influenced the origin, spread, and social impact of printing in Europe, but perhaps these correlations are spurious. To mitigate this concern, I analyze the behavior and impact of Protestant, Catholic, and Orthodox missionaries. Although missionaries did not spread randomly, the factors that influenced where they went are not the factors scholars use to question religion’s impact in Europe. Moreover, different types of missionaries, colonizers, and settlers arrived at different times. Thus, we can see who introduced vernacular printing, newspapers, etc., and who local people copied. If prior to the 20th century, Protestants had a unique vernacular and mass focus, then religious differences in Europe should reappear in Africa, Asia, Oceania, and the Americas. We should also see Asian printing shift when Protestant missionaries arrive, but *not* when Catholic missionaries, Orthodox missionaries, European merchants, and European colonizers arrive.

However, one complexity is secondary diffusion. Even if Protestants initiated a vernacular shift, they first influenced their home societies via primary diffusion. Subsequently, ‘Protestant’ colonizers and merchants (e.g., the British) might be more open to vernacular printing and newspapers than ‘Catholic’ colonizers and merchants (e.g., the French and Spanish). If so, we would expect more printing and newspapers by ‘Protestant-background’ expatriates than ‘Catholic-background’ expatriates. Similarly, if missionaries spur local religious groups to print, these local groups might spur others to print without direct missionary involvement, i.e., secondary diffusion. Secondary diffusion does not mean Protestantism had no effect; Protestantism may merely be further up the causal chain. Over time, diffusion created a ‘world culture’ in which every ‘well-dressed’ country needed printing, newspapers, and mass education (Lechner and Boli 2008). The current ‘consistency’ of ‘world culture’ may mask earlier causes and create the impression that technology and ‘modernity’ caused mass vernacular printing, mass

³¹ The Protestant/Catholic distinction is strong, but not dichotomous and universal. ‘Catholic’ colonizers allowed vernacular education and printing in some contexts, and ‘Protestant’ colonizers restricted them in some contexts.

education, etc. – as if there is one teleological modernity for all societies. The evidence in this article is more consistent with multiple, contingent modernities.

- I. Societies with No Previous Written Language: To measure the predispositions of missionaries, I first analyze societies with no written language before missionaries arrived. Missionaries had less incentive to print in non-literate societies because they did not need to counter written religious texts. Moreover, initiating printing was more costly; missionaries had to first create a written language and teach people to read. Yet, Protestants consistently created writing systems, opened schools, and printed religious texts in previously non-literate societies; Catholics and Orthodox missionaries seldom did unless competing with Protestants. This suggests that, until recently, Protestants valued giving people access to vernacular texts (i.e., the Bible) more than other religious groups. The pattern is consistent in the Pacific, Africa, and the Americas.
 - a. Pacific Islands: Catholics initiated Christian missions in the Pacific, but Protestant missionaries were consistently the first to print books and newspapers there (Cass 1997; Garrett 1985:25, 74, 105, 125, 128, 271; Lingenfelter 1967). For example, Catholic missionaries arrived in Guam and the Marianas in 1668. At the time, they had about 90,000 inhabitants (Hezel, S.J. 2008). Most inhabitants became Catholic and several religious orders kept well-staffed missions there, but they neither printed locally nor printed the local language elsewhere (Carano and Sanchez 1964). The Spanish barred Protestants, but the US invaded the islands in 1898. Thus in 1900, Protestant missionaries arrived - 232 years after Catholic missionaries. Yet by 1908, Protestant missionaries had printed the first portion of Scripture in the local language, Chamorro (Nida 1972:63). Catholic printing in Chamorro began in 1924 (Le Pichon 2006:100). Similarly in Micronesia, Catholic missions began in 1696; Protestant missions in 1852; but in 1856, Protestants were first to print in a local language (Hezel, S.J. 2008; Lingenfelter 1967:97–98).

Whether or not Catholic missionaries initiated and sustained printing depended on Protestant competition. Catholic missionaries arrived in Wallis & Futuna in 1837 and made it their base for the Central Pacific. Previously, two Tongan Methodist missionaries had established a small Protestant community. The Catholic missionaries asked French warships to block Protestant reinforcements and began competing with local Protestants. In 1844, the Catholic mission set up a press and printed religious texts. However in 1850, when the last Protestants left Wallis, the Catholic mission permanently shut down their press (Lingenfelter 1967:75–78).

Protestants never regained a foothold on Wallis and Catholic missionaries never re-establish their press (Barrett, Kurian, and Johnson 2001:808–9; Lingenfelter 1967:78). The first Bible portion printed in the Wallisian language was in 1971 (Lupas and Rhodes 1992:74), and the full Wallisian Bible was finally published in 2011 by the [Protestant] Geneva Bible Society.

Conversely, the first Protestant mission in the Pacific began in Tahiti in 1797. By 1810 they printed the first book intended for Pacific-islanders, in Tahitian, but printed it in London. In 1817 they set up the first press in Oceania to print Tahitian Bibles and educational material. In 1826, they published the first newspaper in Oceania (Cass 1997:106–7; Lingenfelter 1967:1–20, 28; Wright 1976:49). This Protestant printing predated any local Catholic competition or foreign colonization. The French later colonized Tahiti and expelled Protestant missionaries, but by then there was already a large printed literature in Tahitian.

Protestants emphasized printing even for small societies. For example, Protestant missionaries arrived on Aneityum in 1848.³² At the time, the island had about 4,000 inhabitants and no written language. The missionaries arrived with a printing press and printed an alphabet sheet the first year and an Aneityumese school book the next. In 1853 they printed an Aneityumese Gospel, in 1859 a New Testament, and in 1870 an Old Testament (Garrett 1985:172–77; Lingenfelter 1967:80–86; Nida 1972:11).³³

Prior to the 20th century, Catholic missionaries printed before Protestants on only three Pacific islands: Mangareva in the Gambier Islands, Grande Terre in New Caledonia,³⁴ and Wallis Island. The French colonized all three islands and banned Protestant missionaries until the 20th century. However, when Catholic missionaries had a monopoly, their print runs were small and their presses short-lived. On Mangareva between 1837 and 1840, Catholic missionaries printed a broadside, some prayers, and a few copies of a small book, but when they ran out of paper, they permanently shut down the press. This neglect of printing was not because of lack of investment: Catholic missionaries constructed a convent, an extensive road network, and the largest church building in French Polynesia (Garrett 1985:88–96).

In 1854 on Grande Terre, Catholic missionaries lithographed several short books bound into one volume, but then stopped. Eventually, they gave their press to the French colonial government. As mentioned previously, the Catholic mission press on Wallis Island lasted from

³² Protestant Samoan missionaries arrived two years earlier and helped the Europeans translate into Aneityumese.

³³ Nida (1972) lists the date of the New Testament as 1863, and Old Testament at 1879, but Nida is incorrect.

³⁴ Protestant missionaries printed 2 years earlier (in 1852) on the neighboring New Caledonian island of Mare. Protestants were allowed on Mare, but not Grande Terre (Garrett 1992:111–17; Lingenfelter 1967:87–96, 120).

1844-1850, but shut down when the last Protestants left (Garrett 1985:88–101, 1992:111–17, 222–26; Lingenfelter 1967:57–59, 75–96, 116–21).³⁵ Conversely, in New Zealand – where Catholic missionaries faced stiff Protestant competition – Catholics printed large numbers of texts for an extended time-period (Clisby 2001:18–39; Wiltgen 1979:210).

Protestant missionary presses lasted longer and printed more, regardless of Catholic competition. Mishaps – like running out of paper – did not cause permanent closures of Protestant mission presses. Catastrophes – like the press burning down – were quickly remedied. Printing was not a side-task, it was central. Protestants believed that everyone needed to be able to read the Bible for themselves. Thus, neither the size of the indigenous population, nor the lack of Catholic competition, influenced whether Protestants printed. Printing primers, school books, tracts, and the Bible in the local language was standard procedure.

In the wake of Protestant mission printing, literacy spread rapidly throughout Polynesia.³⁶ Often Polynesians taught others to read and spread Christianity to other islands before European missionaries arrived. By the mid-19th century, probably a majority could read (Parsonson 1967). For example, Rarotonga had almost universal literacy by 1857 (Wright 1976:49) and Hawaii had ~91% literacy by 1834 (Laimana 2011:10; Lindenfeld 2021:268). Conversely, in the Ottoman Empire literacy grew from ~1% in 1800 to 2-10% in 1900 (Findley 1989). Persia was similar (Marashi 2015:100) and Portugal had literacy below 30% in 1900 (Baten 2022:5). It is hard to argue that by the mid-19th century Polynesia had greater exposure to European influence or ‘modernity’ than Turkey, Iran, and Portugal in 1900. Moreover, Pacific literacy expanded disproportionately among Protestants. Even in 1930, 63.5% of missionaries in the Pacific were Catholic, but 67.5% of students attended Protestant schools (Burton 1930:91).

Protestant missionaries also started newspapers before Catholics or settlers (Cass 1997; Wright 1976). In 1826, Protestant missionaries started the first newspaper in the Pacific, quickly followed by others in Hawaii (1834), Samoa, Rarotonga, etc.³⁷ By the 1840s nearly every island group had at least one Protestant periodical. Conversely, the first Catholic periodicals in Polynesia were in Hawaii (1852)³⁸ and Fiji (1894). Both were created in response to Protestant

³⁵ Lingenfelter (1967) does not say they closed the press *because* the Protestants left, but the timing is suggestive.

³⁶ The main barrier to the spread of literacy and printing in Protestant mission areas was linguistic diversity and violence, which were likely causally related. The extraordinary linguistic diversity in Vanuatu and New Guinea constrained the spread of printing and literacy in indigenous languages

³⁷ Cass (1997) claims that Methodist missionaries printed a newspaper in Fiji in 1828, but this is a typo. Methodists arrived in Fiji in 1835 and set up their press in 1838 (Gribble 1963:130–32).

³⁸ Chapin lists the first Catholic newspaper as starting in 1852, others in 1860 (Yzendoorn 1927:193)

newspapers criticizing Catholicism (Cass 1997:107; Chapin 1996:22; Gribble 1963:134; Lingenfelter 1967:28; Richstad and McMillan 1978:99; Silva 2008; Wright 1976:49).

Mission-initiated newspapers gave Pacific islanders a way to defend themselves against settlers and colonizers. Between 1842-1899, there were 41 Māori newspapers, which were often highly critical of European activity in New Zealand (Curnow, Hopa, and McRae 2002; McRae 2007).³⁹ During the same period, Morocco had only one Arabic newspaper, published in 1889 by two Lebanese Christians (Abdulrazak 1990:134). Thus, printing, newspapers, and literacy spread more rapidly in Polynesia than in the parts of Asia and North Africa isolated from Protestant missions, but not isolated from European colonial pressure or Catholic missions. This was not because Polynesia was wealthier or had a larger bourgeoisie, more sophisticated technology, or a larger population. Moreover, much of the spread of printing, newspapers, and literacy in Polynesia occurred before any direct colonial involvement or significant European settlement. Arguments used in Europe to question religion's impact do not generalize to Oceania.

In summary, Catholic missionaries began sustained work in the Pacific 129 years before Protestant missionaries arrived. Yet, Protestant missionaries initiated printing and newspapers on almost every island. In the few islands where Catholics initiated printing, the French military barred Protestant missions, and Catholic printing was sparse and short-lived. Protestant printing spurred mass literacy, newspapers, etc., throughout Polynesia and Micronesia – often spread by Pacific-islanders – well before either European colonizers or exposure to European ‘modernity.’ However one measures ‘modernity’ or ‘development,’ it is hard to argue that Polynesians had more in 1850 than Iran, Turkey, Morocco, or Portugal did in 1900, but Polynesians had much broader literacy and newspaper circulation.

- b. *Sub-Saharan Africa*: Most Sub-Saharan African societies had no written language before missionary contact.⁴⁰ In these societies, missionaries almost universally created the written languages and introduced printing and newspapers. Where Protestants were allowed to print, they almost universally were the first to do so (Dixon 2001; Le Roux 2012; Namponya 1978;

³⁹ Thus, European colonizers severely restricted the indigenous press (Wright 1976).

⁴⁰ The exceptions are Muslim and Ethiopian Orthodox societies that had writing, but no printing. Some Africans created their own writing systems in the 19th and 20th century (e.g., the Vai syllabary), but the script-creators had significant contact with both Protestant missionaries and ‘repatriated’ African-Americans (Daniels 2023:46; Tuchscherer and Hair 2002). Some Africans developed scripts based on Arabic (i.e., *Ajami*). Mumin identified 80 African languages that use *Ajami*, i.e., 3.8% of Africa’s 2110 languages (2014:53). However, I have not found any research indicating how many *Ajami* (if any) pre-date missionary-created scripts. Some *Ajami* function as identity markers in societies with multiple scripts, i.e., using ‘Muslim’ Arabic script, rather than ‘Christian’ Latin script.

Pawliková-Vilhanová 2001; Smith 1971:53; Woeber 2012). The earliest vernacular language newspapers in Sub-Saharan Africa were all started by Protestant missionaries and their converts: *Umshumayeli Wendaba* in Xhosa (1837), *Iwe Irohin* in Yoruba (1859), *Leselinyana la Lesotho* in Sotho (1863), etc. (Oberst 2021). Protestant missions were restricted or banned in French, Spanish, Portuguese, Belgian, and Italian colonies. These ‘Catholic’ colonizers also restricted most printing and education in indigenous language. Thus, both printing and education lagged in these colonies relative to British colonies (Gallego and Woodberry 2010; Woodberry 2004).

In both British colonies and not-yet-colonized areas, Protestant missionaries usually began printing, education, and newspapers before colonizers, settlers, and Catholic missionaries did. Later, the British used the grant-in-aid system to incentivize English-language education, but they were never able to restrict either indigenous-language education or printing.

Protestant and Catholic missionaries had comparable access to Lesotho, Botswana, and Zimbabwe. All three territories were landlocked British colonies/protectorates with similar pre-colonial languages and social structure. In Lesotho and Botswana, local chiefs retained substantial power. In Zimbabwe, white settlers disempowered blacks. In Lesotho, Catholics gained more converts; in Botswana, Protestants gained more converts. In Zimbabwe, Catholics and Protestants began permanent mission work at roughly the same time and gained similar numbers of converts. Yet in *all* three, Protestant missionaries initiated vernacular writing, printing, and newspapers (Woodberry 2011). For more details see the online appendix.

- c. *The Americas*: In Latin America, Catholic missions began hundreds of years before Protestant missions, but Protestant missions still created the writing systems and first printed texts in most indigenous languages, with four exceptions. Catholic missionaries opened early presses in the capitals of the Aztec and Inca Empires, i.e., in Mexico City (1544) and Lima, Peru (1585). At the time, these were the largest indigenous empires and the Spanish hoped to supplant them and their religions.⁴¹ Initially, Catholic missionaries printed in the main languages of these empires: Nautel, Quechua, and Aymara. However, they replaced pre-Columbian writing systems with the Latin alphabet and destroyed virtually all pre-Columbian texts.⁴² For the first 200 years, printing

⁴¹ The Maya had a writing system, but the Mayan Empire collapsed before the Spanish arrived. Thus, Catholic missionaries did not print in Guatemala until the 1660s, long after the 1524 conquest (Johnson 1988:48–50).

⁴² The Philippines was like Latin America. Before Spanish colonization, Muslims used an Arabic script, Chinese used Chinese characters, and others a Brāhmī-based script called Baybayin. Catholic missionaries printed several texts starting in 1593. They initially used Chinese and Baybayin, but soon shifted to Latin type, eventually eradicating Baybayin (Chia 2011). Printing expanded somewhat in the 19th century, but the real explosion of

was almost entirely religious, but printing in indigenous languages was short-lived and focused on helping missionaries communicate with indigenous people (Hallewell 1982:4–5; Johnson 1988:5–7, 55–58). Later printing was almost entirely in Spanish, Portuguese, and Latin.

In areas without a large pre-Columbian empire (or where the empire collapsed before Spanish colonization), both colonizers and Catholic missionaries delayed printing, with one exception. From 1700–1727 Jesuits printed texts in Guarani, a previously unwritten language. However, a coalition of pro-slavery elites and anti-clerical Enlightenment leaders (e.g., the Marquis de Pombal) expelled the Jesuits and vernacular printing stopped. In 1754, in order to weaken Catholic influence, the Marquis de Pombal banned printing in all Portuguese colonies (Hallewell 1982:4–10, 1995:93; Johnson 1988:75–77). Consequently, with a few short-lived exceptions, printing did not develop in Brazil or reemerge in other Portuguese colonies until after 1807, when Napoleon invaded the Iberian Peninsula. The British military defeated the French, and administered Portugal until the end of the Napoleonic Wars. The dislocation of the Spanish and Portuguese crowns allowed Spanish colonies to gain independence and created space for printing to expand (Bastian 1992; Garza 2019; Hallewell 1982:8–10, 23–27).⁴³

Even in *independent* Latin American countries, the Catholic Church neglected indigenous-language printing and education. Throughout Latin America, Protestant missionaries created the written form of most indigenous languages, printed the first books in them, and opened the first schools that used indigenous languages. Large-scale Catholic investments in indigenous communities followed large-scale conversions to Protestantism in the 20th century (Aldridge 2018; Smith 1991; Trejo 2012). North America was similar. Catholic missions in North America began in the late 1500s, and were firmly established in the 1600s. French colonization also began in the 1600s. However, there was no printing by Catholic missionaries or in French areas of North America until after they came under direct US or British control (Hallewell 1995:4).

Orthodox missions in Siberia and Alaska were similar. They established churches and creating written forms of some languages, but they did little to spread literacy or printing in

printing, newspapers, and mass education happened after US colonization and the arrival of Protestant missionaries (Calacday 2021; Javellana 1999:422, 431–35; Valenzuela, B.J. 1930). Thus, “The printing press in the Philippines had been turning out books almost three centuries before a real newspaper was published” (Valenzuela, B.J. 1930:1)

⁴³ The first attempt to introduce printing in Brazil was made by the [Protestant] Dutch in the 1600s, during their short occupation of Brazil. The first Portuguese-language Bibles were imported to Brazil in the 1850s by the British and Foreign Bible Society (Hallewell 1982:10–11, 20). Many histories of printing in Latin America ignore Protestant missionaries, so it is crucial to read them in conjunction with histories of Protestantism in Latin America (Bastian 1992; Helgen 2022; Racine 2008, 2010, 2017, 2020).

languages other than Russian and Church Slavonic. From 1812-1826, the Tsar allowed the [Protestant initiated] Russian Bible Society to print in indigenous languages. However, Orthodox clergy reacted against printing and education in “non-Christian languages,” and the government shut down the Bible Society in 1826 (Kan 2001:177–79).

Conversely, before 1685, Puritans used half the paper in New England to print Bibles in Native American languages (Ryrie 2021). Protestant missionaries continued to create written forms for indigenous languages and print in these languages throughout the 18th, 19th and 20th centuries (Banks 2004; Round 2010). Typically, they used Roman script for new languages, but celebrated Sequoyah’s Cherokee syllabary and used comparable syllabaries with some Native American languages (Banks 1983; Tuchscherer and Hair 2002). This does not negate Europeans’ abuse of native peoples throughout European settler colonies. I merely contrast the relative focus on creating written languages and printing texts.

- d. *Summary of Societies without a Written Language*: In Oceania, Sub-Saharan Africa, and the Americas there are clear religious differences in how avidly Protestant, Catholic, and Orthodox missionaries created written languages and printed books and newspapers in those languages. These religious differences mirror historic Protestant, Catholic, and Orthodox differences in Europe – which suggests these religious differences are not coincidental. European colonizers and settlers generally banned, restricted, or disincentivized vernacular printing and literacy. ‘Catholic’ colonizers were more restricted than ‘Protestant’ colonizers were (Woodberry 2012).⁴⁴ France and Belgium may have been more secular or Catholic than the US or UK, but it is hard to argue they were less ‘modern’ throughout the 19th and early 20th centuries.

Non-European colonizers and non-Christian missionaries, e.g., Muslims in Africa, did not systematically study non-written languages or create written versions of them (Daniels 2023:52; Mumin 2014:43). Muslim education was in Quranic Arabic. However, African Muslims sometimes used knowledge of Arabic script to create informal writing systems for their local languages (i.e., *Ajami*).⁴⁵ The Greek, Roman, Chinese, and other Empires behaved

⁴⁴ Yet in 1887, the US banned all education in indigenous languages and all speaking of indigenous languages at mission schools, instituting forced assimilation. Missionaries fought these restrictions, but lost (Fea 2016:105–7).

⁴⁵ Most early examples were comments on Arabic religious texts, i.e., “languages of religious explanation” (Brenner and Last 1985:433). *Ajami* are also used for mundane topics, but Arabic remains the ‘sacred language.’ Even magical segments of *Ajami* text are still written in Arabic (Ngom 2018:153). However, African *Ajami* have received little attention until recently because they are typically informal, idiosyncratic, unstandardized, and often extremely difficult to read without intimate familiarity with the local context and writer (Ngom 2018:159–60).

similarly: they imposed their language and/or writing system on conquered peoples and did not develop writing systems for pre-conquest languages, although neighboring and successor states sometimes created writing systems based on the imperial script (Stoneman 2019:410, 416).

2. Societies with a Written Language: Next I analyzing the spread of printing in societies that had a written language before missionaries arrived, but had not printed, e.g., Theravada Buddhist, Hindu, and Muslim societies. Here, barriers to missionary printing were lower because (1) texts already had religious authority and (2) some people could already read. The complexity of the writing systems was not a crucial barrier, because everyone had access to woodblock printing and later lithography. Moreover, none of the languages was more complex to print than Chinese, Japanese, or Classical Tibetan. Catholic missionaries initially used woodblock printing in China and Japan and could have used it elsewhere. Literate societies also typically had the financial and technological ability to print, even if they did not. In this section, I focus on what induced local people to print, publish newspapers, begin mass education, and shift written language closer to spoken language.
 - a. Theravada Buddhists in Southeast Asia: Theravada Buddhist societies printed *dhārani* on clay, and had regular exposure to East Asian book printing, access to both imported and locally-made paper, and an extensive written literature before Christian missionaries arrived; but none printed books before the 19th century. Theravada Buddhists also had extensive contact with Catholic missionaries and European traders, experienced various forms of European colonization, and sent diplomatic missions to Europe before Protestant missionaries arrived. There were no technical or financial reasons blocking them from printing. Yet we see consistent religious patterns in how printing developed in Thailand, Myanmar, Sri Lanka, Cambodia, and Laos.
 - (1) Thailand/Siam: Thailand is a crucial test case. Europeans never colonized Thailand, so Protestant/Catholic differences were not caused by colonial regulations. The Thai sent “tribute” missions to China and large Chinese and Japanese communities lived and traded in the capital (Caprio and Matsuda 2017; Ribeiro 2017; Van der Cruyse 2002). Moreover, hard wood, Chinese paper, and locally made paper were widely available (Duverdier 1980:209–12; Hinüber 2015:945; Hunter 1978:111–14, 141–44, 240; Nordstrand 1961).

In 1554, Catholic missionaries arrived and gained significant influence at court. They founded a seminary, gave printed books to the king, and escorted Thai embassies to Europe. One

embassy toured the royal printing press in France and was told the press would be able to print Thai (Smithies and Bressan 2001; Van der Cruyse 2002:231, 383). In 1787 in Pondicherry (a French colony in India), Bishop Arnaud-Antoine Garnault printed a primer and small Thai catechism using Roman script. In 1798, 244 years *after* Catholic missionaries began work in Thailand, Garnault printed a small catechism in Bangkok, again using Roman script. However, Thai would have needed special training to read Roman script and it is unclear if any Thai used these texts. Most likely, new Catholic priests used them to communicate before they mastered Thai. Regardless, the texts had no lasting impact. The next bishop to Thailand, Jean-Baptiste Pallegoix, was unaware of them. When he imported a printing press in response to Protestant missionary printing, he thought it was the first Catholic press. Pallegoix's press also only used Roman type and printed catechisms and pastoral letters for converts. In 1850, the Catholic mission acquired a Thai font from the Baptist Mission Press, but continued to print with Roman type (Duverdier 1980:214–16, 224–28; Winship 1986:46–47). Catholic printing had little impact and histories of Thai printing seldom mention it.

In 1819, Baptist missionaries in Burma created the first Thai font and printed the first Thai-script book (Limapichart 2009: 368). In 1823, the London Missionary Society in Singapore also began printing Thai-script biblical texts and tracts (Winship 1986:49–50). Protestant missionaries moved to Thailand in 1833. One of them, Daniel Beach Bradley, imported a printing press and Thai font, and in 1836 he printed the first Thai-script document printed in Thailand. A month later the Baptists sent a trained printer and several more presses. Protestant printing increased rapidly (Wells 1958:18; Winship 1986:51). This print-explosion spurred Catholic missionaries to import a press (Duverdier 1980:224–28). Protestants also encouraged Thais to print, although Protestant missions dominated Thai printing for over 40 years.

In 1839, the King printed a decree banning opium on Bradley's press – the first printing commissioned by a Thai (Limapichart 2009:370; Smith 1981:22). The next year, the future king Mongkut both helped Protestant missionaries improve their Thai font and started a press at a Buddhist monastery. Missionaries had critiqued Thai Buddhism and Mongkut wanted to reform it to mitigate missionaries' critiques. Mongkut lithographed some texts in *Pāli* (the language of the Theravada Buddhist canon), but not in Thai. The first book printed in Thai by Thais without missionary assistance was an 1868 book on reforming Buddhism. Mongkut also sent monks to Sri Lanka to obtain more accurate and complete copies of the *Pāli* cannon. He gave Sinhalese

Buddhists in Sri Lanka a printing press, which they used to print the first non-missionary Sinhalese newspaper. In 1893, Mongkut's descendants printed the *Pāli* cannon for the first time anywhere (Duverdier 1980:241–42, 256; Emmrick 2021; Frederick and De Alwis 2009:63; Jory 2000:365; Vella 1957:35–42).

Protestant missionaries published the first ten Thai newspapers and first two magazines. Finally, in 1874, some princes published a literary magazine, *Darunōwāt*, the first Thai magazine printed by Thais. In 1875, they published *The Official News*, the first government gazette. However, as a publication of the royal court, it was not critical of official policy (Limapichart 2009; Senanan 1975:32–36). The beginning of the public sphere – including discussing official policy and complaining about corrupt officials – developed in missionary newspapers (Limapichart 2009).

Protestant missionaries also initiated Thai commercial printing. In 1850, Bradley became a self-supporting missionary and financed his work with commercial printing. In 1868, the Baptists closed their Thai mission. Consequently, J.H. Chander became the chief foreign advisor to the Thai court and S.J. Smith used the former 'Baptist Mission Press' for commercial printing. He also sold presses and fonts to early Thai and Chinese printers. Together Bradley and Smith helped pioneer a new Thai literary style (Duverdier 1980:235–36; McFarland 1999:33; Senanan 1975:27–28; Smith 1981:21, 42; Wells 1958:13).⁴⁶ This pattern was similar in northern Thailand, which was originally relatively independent from southern control. Protestant missionaries introduced both the press and newspapers there as well (Lord 1969:93–102; Swanson 1988).

(2) *Burma/Myanmar*: Prior to European contact, paper was made locally in Burma (Ghori and Rahman 1966; Hunter 1978:111–14, 141–44, 240; Ramaseshan 1989). Catholic missionaries arrived in 1721 and kept a consistent presence thereafter. In Rome, they created a Burmese font and printed an alphabet, a small Prayer Book, and a Catechism in 1786 (Bigandet 1887:12, 23). They *may* have printed a Latin-Burmese dictionary in Burma, but this is uncertain, and no other publications are recorded (Finch 2017:330).⁴⁷

Protestant missionaries entered Burma in 1813, imported a press, and created Burmese fonts in 1816. In 1817, they printed a Burmese translation of the Gospel of Matthew.⁴⁸ In 1842, they published the first indigenous-language newspaper (in the Karen language) and in 1843, the

⁴⁶ Protestant missionary kids developed and marketed the first Thai-script typewriters (Mullaney 2017:45–55).

⁴⁷ Other sources consistently claim Protestant missionaries were the first to print (e.g., Emmrick 2021; Lin 2016).

⁴⁸ In 1810, Baptist missionaries in India (Serampore) began printing Christian texts in Burmese.

first Burmese newspaper (Lin 2018:313). Their influence was so pervasive that the print historian Dennis Rhodes writes “The story of the first printing-presses in Burma is really the story of the American Baptist missions” (1969:81). The British colonized Burma in three segments: in 1826; 1853, and 1885. Missionaries printed in both colonized and non-colonized areas. Secure conditions under British colonialism may have shifted the tone of missionary tracts, but did not influence whether Protestants printed.

Protestant mission printing spurred a Buddhist response, whereas Catholic printing had little impact (Lin 2016; Rhodes 1969; Ruiz-Falqués 2017). In the 1850s, Catholic missionaries opened a press in Moulmain, but it originally lacked Burmese fonts. In 1864, after the 2nd Anglo-Burmese War, King Mindon opened the first royal press at Mandalay. It printed almost exclusively Buddhist works (Igunma 2013:633; Lin 2016). The king also commissioned a Burmese gazette in 1874 (Lin 2018:314). Virtually all other printing by Burmese occurred after British colonization. Until the 1920s, virtually all non-missionary printing was Buddhist. Much of it was spurred by Protestant mission printing, a desire to preserve Buddhist literature, and movements to spread a new, Protestant-like, lay-focused Buddhism. Buddhists even created organizations that imitated Protestant ones, such as the Young Men’s Buddhist Association (YMBA) (Emmrick 2021; Lin 2016; Maung 1976; Ruiz-Falqués 2017).

(3) *Sri Lanka (Ceylon)*: Catholic missionaries came to Sri Lanka in 1505 and the Portuguese colonized coastal areas from 1597 to 1658. It was a time of political and religious change, but eventually the Kingdom of Kandy consolidated control of the interior. Catholic missions birthed a thriving Christian community. By the end of Portuguese rule, perhaps a majority of Sri Lankans in coastal areas were Catholic. Missionaries set up a religious educational system using Portuguese. They imported texts in Latin and Portuguese, but did not print locally or import texts in local languages (Peiries, O.M.I. 1943; Somaratna 2016:41–205, 217, 349).

Muslims may have introduced paper to Sri Lanka, but if not, the Portuguese introduced it in the early 1500s. However, in imitation of early Buddhist practice, Buddhists continued to write on palm leaves until the 19th century. Probably from the 1600s onward, the Kingdom of Kandy made paper, but only used it for musket cartridges. Paper, pens, and ink spread to the Buddhist and Hindu communities in the 19th century via Protestant mission schools (Kularatne 2006:7–8; Nordstrand 1961).

The Dutch East India Company (VOC) defeated the Portuguese (1639 - 1658) and tried to replace Catholicism with Calvinism by persecuting Catholics and funding some missions among Catholics. Simultaneously, the VOC feared opposition from the King of Kandy and so constrained missions to Buddhists (Emmer and Gommans 2021:95–96, 299–300; Somaratna 2016:213–14, 218, 226–29). The VOC's main concerns were stability and profit, not conversion. Thus, the VOC selected the clergy, paid their salaries (preventing them from getting funds from local congregations), transferred them regularly, censored their correspondence, and prevented them from having close associations with local people. Consequently, the VOC had difficulty recruiting and retaining ministers. Most were older, few learned local languages, none studied Buddhism or Hinduism, and most returned to the Netherlands or transferred to other colonies within a few years (Somaratna 2016:214–16, 232–39).

When Rev. Philippus Baldeaus tried to mobilize ministers to evangelize Buddhists and Hindus, the VOC expelled him, and clamped down on ministerial independence, removing all administrative control of churches, forbidding ministers from traveling in Sri Lanka without company approval, and mandating that all correspondence between clergy in Sri Lanka be channeled through the government. When Moravians tried to set up a mission in Sri Lanka, the VOC expelled them. This quelled enthusiasm for converting Buddhists and Hindus (Somaratna 2016:282–84, 292, 303–5).

The VOC was also unwilling to pay many clergy. Thus, there were seldom 10 Protestant ministers on the island and never more than 20, i.e., less than 1/10th of the Catholic clergy during the Portuguese period. Despite persecution, Catholic priests from Goa secretly entered Sri Lanka. In fact, there were consistently more Catholic priests than Protestant clergy. Moreover, Catholic clergy stayed longer, knew the language better, and were closer to the people. During the Dutch period, Catholic clergy began writing and translating texts into Sinhala and Sri Lankan Tamil but did not print them (Kularatne 2006; Peiries, O.M.I. 1943; Somaratna 2016:234–35, 321–23, 338, 349–52, 356–58, 362, 366). The VOC expanded the Portuguese Catholic educational system and switched the language of instruction to Sinhala and Tamil. However, the VOC had to rely on Catholic-background instructors whom Protestant ministers visited about once a year. Still, literacy increased dramatically and became several times higher in Dutch areas than in the [Buddhist] Kingdom of Kandy (Somaratna 2016:251, 258, 300–302, 308).

Dutch clergy introduced Sinhalese printing in 1734 and Tamil printing in 1739, but the government maintained control of the press.⁴⁹ Most printing was religious, but the translations were poor and not distributed in Buddhist-controlled areas. The only polemic work, ‘*The Triumph of Truth*,’ critiqued Catholicism, not Hinduism, Islam, or Buddhism; and the *Heidelberg Catechism* probably did not threaten or entice non-Christians either (De Leede and Wijesuriya 2021; Kularatne 2006; Somaratna 2016:311, 317–18). Regardless, Dutch printing did not spur a response (Bretfeld-Wolf 2017:339; Kularatne 2006:1–29).

When Napoleon conquered the Netherlands, the British took over Sri Lanka and the Dutch Reform Church almost immediately disappeared, leaving few traces (Somaratna 2016:299). In 1813, the mission lobby blocked the British East India Company (BEIC) charter and forced the British to allow missionaries in their colonies. When the British formally annexed Sri Lanka in 1815, Methodist missionaries imported a press. Six other Protestant mission presses soon followed (Rhodes 1969). Protestants also printed Sinhalese and Tamil texts elsewhere and imported them, flooding the island with printed texts (Missionary Register 1815:291; Kesavan 1985:388). These new Protestant missionaries critiqued Hinduism and Buddhism, spurring a reaction. Hindus responded first, but I discuss this in the section on Hinduism.⁵⁰ In 1862, the Buddhist monk Mohottivatte Gunānda founded the *Society for the Propagation of Buddhism* in imitation of the [Protestant] *Society for the Propagation of the Gospel*. He bought an old press from the *Church Missionary Society* and began printing Buddhist replies to mission tracts. This was the first printing by a Sinhalese Buddhist (Gombrich and Obeyesekere 1988:203; Kularatne 2006:xv). Buddhist printing expanded rapidly, and in direct reaction to Protestant mission printing (Bretfeld-Wolf 2017; Gombrich 1988:133–35; Holt 1981; Kularatne 2006).⁵¹

After 1813, missionaries felt more secure in British colonies than elsewhere and were more willing to critique their religious adversaries. In Thailand, missionaries needed the king’s permission to work in the country and many missionaries and missionary kids worked as

⁴⁹ Jesuits had Tamil fonts in India, but did not import a press or Tamil books to Sri Lanka (Kularatne 2006).

⁵⁰ I suspect Hindus responded more quickly than Buddhists because (1) Protestant work among Tamils in India had started earlier (meaning texts and educational materials were already available), (2) missionaries attempted to undermine the caste system (Robinson 1867:119–21), and (3) Protestant mission work among Tamils in Sri Lanka was so intense. Between 1816 and 1855, Protestant missionaries educated 30,000 students from a population of 120,000 on the Jaffna peninsula. Thus, “Jaffna may have been among the most literate places on earth” (Bate 2021:16–17). Conversely, missionaries mostly ignored Sri Lanka Muslims and Muslims did not print until 1882 (Wahab-Salman 2016).

⁵¹ Eventually missions lost their monopoly on Western education. In 1869, a convert from Christianity to Buddhism (who trained in a mission school) opened a non-monastic Buddhist school (Gombrich and Obeyesekere 1988:208).

advisors to the King and royal family (Mullaney 2017:45, 50, 342; Smith 1981:21, 42; Wyatt 1984:183). Thus, missionaries critiqued Buddhism more harshly in Sri Lanka than in Thailand, and Buddhist printing grew more rapidly in Sri Lanka than in Thailand. Earlier Dutch Protestant printing in Sri Lanka was not focused on converting Buddhists and Buddhists did not copy it.

(4) *Cambodia*: Catholic missions began in Cambodia in 1719, but they did not print in the Khmer language for 175 years. Fr. Joseph Guesdon created the first Khmer type in Paris, circa 1894, and printed some prayers there. Catholic missionaries also printed a text with Roman type in 1895 and with Khmer type in 1902, both in Hong Kong (Le Pichon 2006:94; Nepote and Khing 1981:76). Protestant missionaries repeatedly sought permission to work in Cambodia, but the French government blocked them until 1923. Thus, Protestants tried to influence the country through printing elsewhere. The *British and Foreign Bible Society* (BFBS) created Khmer fonts and printed the Gospel of Luke in Singapore in 1899,⁵² and the *American Bible Society* (ABS) printed Luke and Acts in New York in 1900. Starting in 1921, Protestants printed large numbers of Khmer texts in Shanghai and Hanoi for export to Cambodia, but the French restrict Protestant missionary education and printing in Cambodia. Only in 1954 could they print the Bible in Cambodia (Nepote and Khing 1981:77 n. 39; Nida 1972:58).

The French established a Cambodian protectorate in 1863, leaving the Cambodian royal family in place. The French administration began lithographing in Khmer in Vietnam in the 1860s and installed a press in Cambodia in circa 1886, but only used it for official publications. A lithographic press was set up at the royal palace around 1871, but it was used for printing letterhead, programs for ceremonies, etc. The first printing by Cambodians outside the palace was in 1904. Palm leaf manuscripts remained the dominant form of publishing through the 1910s (Emmrick 2021; Nepote and Khing 1981).

To reduce Thai influence in Cambodia, the French government began printing both a Khmer periodical and many Buddhist texts in 1925, two years after Protestant missionaries arrived. Initially, the Buddhist *sangha* resisted this printing,⁵³ and no Khmer printed a newspaper until 1936 (Emmrick 2021; Nepote and Khing 1981:61–64, 76–78). Thus, in Cambodia the French administration introduced printing and kept Protestant missionaries out until 1923.

⁵² Iversson claims the Gospel of Luke was lithographed (2008:76), so it may not have used the BFBS font.

⁵³ At first, Buddhist monks resisted printing Buddhist texts because they “had a symbolic value incompatible with wide dissemination.” However, a few progressive monks like Chuon Nath and Huot That used print to advocate Buddhist reform (Emmrick 2021; Nepote and Khing 1981:62–63, 76).

Printing outside of official circles began only in the 20th century and grew slowly. Perhaps because the French kept Protestant missionaries and Protestant printing out of the country, Buddhist leaders did not feel threatened and fought the expansion of printing.

(5) *Laos*: Catholic missionaries worked among the Lao from 1630-1688 and again after 1858. They soon had a large and growing church. However in 1861, Protestant missionaries in Thailand lithographed the first book printed in Lao (Duverdier 1980:256) and by the 1870s, Protestant missionaries began making short trips into Laos from northern Thailand. In 1892, Protestant missionaries initiated movable-font printing in Tham Lao (Lanna script) at their press in northern Thailand. They printed Bibles, tracts, and textbooks, and colporteurs distributed them in Lao areas (American Bible Society 1913:343–48; Igunma 2013:633).⁵⁴ Catholic missionaries at the Nazareth Press in Hong Kong created Laotian fonts in 1900 (Le Pichon 2006:92), but delayed printed Lao texts until 1924 (Le Pichon 2006:100).

In 1902, the French allowed French-speaking Swiss Protestant missionaries to work in Laos, and they immediately began Bible translation. Other non-French missionaries were still banned. The BFBS created a Lao font (Būhān script) and printed the Gospels of John and Luke in Paris in 1906 & 1909, respectively (Audétat 1952; Jacquet, Jr. 1954; Nida 1972:249).⁵⁵ However, the BFBS font was large, so the Swiss Protestants cast a smaller font in Marseille, where they printed the Gospel of Matthew in 1914 and the New Testament in 1926. Finally, they printed the whole Bible in Vietnam in 1932 (Audétat 1952, 1954).

In 1931, the French-government-sponsored *Buddhist Institute of Vientiane* began publishing Buddhist texts (Kourilsky 2018:171, 181) and in 1941, the French government printed the first Lao gazette. The French Propaganda Ministry initiated the *Buddhist Institute*, gazette, and Lao book printing to divert Laotians from reading Thai publications (Ivarsson 2008:133, 152, 181; Kourilsky 2018).⁵⁶ Because the French dominated Laos in 1886 and formally annexed it in 1898, Protestant and non-French missionaries had difficulty working there (Thomas 1954). Up through 1945, all printing inside Laos was conducted by the French colonial administration or the Japanese military.

⁵⁴ I have not yet been able to determine how much distribution was in Laos, as opposed to Lao areas of Thailand.

⁵⁵ Nida (1972) lists the place of publication as Song Khone (in central Laos). However, Fritz Audétat (1952) was directly involved in the translation and printing, but only mentions printing in France and Hanoi.

⁵⁶ French government printing began after Protestant missionaries arrived, but the sources I consulted do not mention missionaries as a driving factor.

(6) *Overview of Theravada Buddhist Societies*: Table 2 shows the correlates of printing in Theravada Buddhist societies. The bottom two rows show the dates when a person from that ‘country’ first printed and first published a newspaper. The top three rows show possible vectors for the spread of printing: colonization, Catholic missions, and Protestant missions.

(7) Table 2: The Dates of Local Printing and Newspaper Publishing relative to the dates of Colonization, Catholic Missions, and Protestant Missions					
	Thailand	Myanmar	Sri Lanka	Cambodia	Laos
Colonization	Never	1826-1885	1597	1863	1884/1893
Catholic Missions	1554	1721	1505	1719	1630
Protestant Missions	1833	1813	1813 ^a	1923	1902
Local Printing	1868	1864	1849/1862	1904	After 1945
Local Newspaper	1875 ^b	1874 ^b	1862	1936	After 1945

^a This is the arrival date of non-state supported Protestant missionaries. Earlier Protestant chaplains employed by the Dutch East India Company (VOC) printed small numbers of text, but the VOC blocked missions to Buddhist & Hindus and they did not begin printing.

^b Since they were published by the Thai and Burmese royal courts, they are technically official gazettes.

There is no association between either the date of colonization or Catholic missions and printing or newspapers. However, there is a tight correlation between the arrival of Protestant missionaries and the beginning of both local printing and newspapers. In Thailand, Burma/Myanmar, and Sri Lanka, Protestant missionaries arrived in the 19th century and local people printed books and newspapers soon afterwards. The earliest locally-printed texts were almost universally Buddhist, including critiques of missionaries. Conversely, in Cambodia and Laos, the French barred Protestant missionaries until the 20th century and local people did not print books or newspapers until the 20th century. Even then, printing developed slowly relative to Thailand, Burma, and Sri Lanka. The French government sponsored the increase in Laotian and Cambodian printing to counter the influence of Thai books and newspapers. Protestant missionaries spurred both printing and newspaper printing in Thailand; thus the response in Cambodia and Laos was indirectly influenced by Protestant missions. Even after paper was widely available, Theravada Buddhists wrote on palm fronds, and when the French government tried to print canonical Buddhist texts in a local script, Buddhist leaders fought them. Thus, the slow adoption of printing was not economic or technical. A similar pattern is evident in Hindu and Muslim societies.

b. The Hindu World: Hindus were repeatedly exposed to both paper and book printing by Chinese, Mongols, Tangut, and Tibetans, but did not print texts or use paper until much later.⁵⁷ Hindus block-printed decorations on cloth, but not books. Yet, South Asia had highly sophisticated technology. In fact, South Asian fiber spinning, colorfast mordant dyes, and complex block-printed designs were superior to anything Europeans could manufacture. Thus, from the 1680s to late 1750s many European societies criminalized importing India block-printed cloth to protect the European cloth industry (Postrel 2020:193–99).

Several theories may explain Hindu resistance to paper and book printing. First, the caste system made paper suspect. Central Asian paper used rags and Brahmins worried rags could be ‘polluted’ by contact with members of low castes (Bloom 2001:41–42; Gupta 2013:554). Second, Brahmins viewed Vedic knowledge as secret. Low-caste people were not even allowed to hear the Vedas recited (Bronkhorst 2011:266). Brahmins guarded and memorized Vedic knowledge. Some Sanskrit religious manuscripts were written down from the 11th century on, but access to the manuscripts was restricted, and oral transmission preferred (Bronkhorst 2014:6–7; Galewicz 2021:57, 61–63).⁵⁸ It took Protestant missionary printing to overcome this aversion.

(1) *India:* After the Portuguese arrived in India in 1498, Hindus were repeatedly exposed to printing by Portuguese, Dutch, French, and British traders, by Catholic missionaries, and by Armenian Christians, but with little impact. Jesuit missionaries began printing in 1556, but Catholics only printed 37 books (59 volumes) in South Asia in the next 265 years, including reprints. Six books (10 volumes) were in Tamil with Tamil type; a few were in Konkani with Roman type. Most were in European languages. However, this printing had little impact on Indian society and no one copied them (Blackburn 2003:32–44; Pendse 2013:43–44, 53–58, 65–66; Shaw 1987:5–6).⁵⁹

The French began establishing trading posts in 1667. In 1758, they imported a press, but by 1800, they had only printed a few official documents, a pamphlet, and a Thai catechism (Shaw 1987:8). This had no impact on Indian printing.

The British began establishing trading posts in 1639. In the south (Madras Presidency), they hired Protestant missionaries in a neighboring Danish colony to print for them (Galewicz

⁵⁷ Depending on the region, paper replaced palm leaves in the 13th – 19th century (Blackburn 2003:21–23).

⁵⁸ The compilation, translation, and printing of Vedic texts occurred in the 19th century and Protestant missionaries were active in the process (Galewicz 2019, 2021).

⁵⁹ Only Jesuits printed. They used 6 presses and 4 Tamil fonts, together with woodblock printing. However, in 1684 the Portuguese restricted education and printing to Portuguese and Latin. After this, all Catholic printing stopped until the 1820s, including in European languages. Catholic missionaries working in French-ruled or indigenous-ruled areas could have printed, but did not.

2021:110–34; Shaw 1987:7). In the north (Calcutta Presidency), several people imported presses in the 1770s, including a Swedish Protestant missionary (Khan 1984; Shaw 1984, 1987:10). British merchants began small-scale boutique printing of English newspapers, English books, and some classical Indian texts. They did not transform Indian book culture, but they trained one important type cutter, Pañcānana Karmakāra, whom Baptist missionaries quickly hired. Parsis/Zoroastrians who worked at English colonial press in Bombay print a Parsi religious text, the Khurdah Avesta, in 1798 (Shaw 1987:10) and from 1802 periodicals, with British government support (Ranganathan 2022). This is the only clear example I know where non-missionary printing spurred an Asian religious community to print books or newspapers before 1874.⁶⁰ However, Protestant missionaries spurred Hindus and Muslims to print, and transformed India book culture (Galewicz 2021:110; Gupta and Chakravorty 2004b:11). “[Their] initiative lay behind the printing in most Indian languages” (Kesavan 1988:354).⁶¹

In South India, German Halle missionaries in Tranquebar spurred printing. In 8 years, they printed more books than Catholic missionaries had printed in 265 years, including a Tamil New Testament in Tamil script. By 1800, they had printed 338 books, including 266 Tamil texts with Tamil font. They also opened India’s first paper mill and a type foundry. When the British East India Company (BEIC) captured a French Press in Pondicherry, missionaries convinced the BEIC to let them use it in exchange for printing BEIC texts (Blackburn 2003:43, 47, 51, 58). In 1789, the Rev. Andrew Bell set up the *Madras Male Orphan Asylum* and created a system of monitorial education⁶² which helped spread mass education around the world. Together with Rev. Richard Hall Kerr, he set up a press and trained orphans in the art of printing. Their graduates spread printing beyond missionary circles (Blackburn 2003:77–78). Missionaries and their Indian co-workers also made important reforms in Tamil writing by (1) improving the orthography to distinguish long and short vowels and to distinguish 3 distinct ‘R’ sounds, (2)

⁶⁰ In 1874 ruler of Khiva imported the first lithographic press in Central Asia (Khalid 1992). I have not demonstrated a clear missionary link to this importation.

⁶¹ Some may have been influenced via Fort William College, but it is difficult to disentangle this from Protestant missionary influence. The Provost and Vice-Provost, Rev. David Brown and Rev. Claudius Buchanan, were Evangelicals, the Baptism missionary William Carey was Professor of Bengali, the Christian convert Ram Ram Basu worked there, it had a department for Bible translation, and Serampore Mission Press printed its textbooks. Thus, “Modern text book writing in Bengali was started in the Fort William College under the guidance of [William] Carey” (Kesavan 1985:240).

⁶² In the monitorial system, teachers taught senior students, who taught younger students. The system allows a small number of trained teachers to educate large classes with different abilities. The monitorial and Sunday School education systems made mass education of non-elites more economically feasible.

standardizing spelling, (3) introducing punctuation, and (4) pioneering a new prose style (Blackburn 2003:38, 59, 62–65).

The first Hindu to set up an independent press was Serfoji II, Maharaja of Tanjore in 1802. He sponsored printing books in Marathi and Sanskrit using *Devanagari* type in 1805. Halle missionaries tutored Serfoji II and helped him set up the press (Galewicz 2021:133; Nair 2005:283, 286). Similarly, the earliest Tamil book printed by an Indian was religious poetry printed in 1809, probably at the *Madras Male Asylum Press*. The two earliest Indian-owned Tamil presses were founded by Nanappirakaca Pillai from Tanjore. Both his name and the books he published suggest he was a Christian (Blackburn 2003:85, 88, 205).

Protestant missionary printing also spurred anti-missionary printing by the *Kalvi Kalaneiyam Press (Caturveda Siddhanta Society)* and by Arumuga Navalar, who originally worked with Protestant missionaries Sri Lanka. However, Napoleon invaded Germany and shut down Halle in 1806, this restricted the supply of missionaries and funds to the Halle mission in India. Perhaps as a result, printing spread more slowly in Madras Presidency (south India) than Calcutta Presidency (north India) (Galewicz 2021:134; Hudson 1992).

The real transformation of Indian book culture began in 1800 in the Danish colony of Serampore (near Calcutta) when Baptist missionaries opened a press. In 34 years, they printed 212,000 books in about 40 languages using vernacular fonts that they created (Gupta and Chakravorty 2004b:11; Kesavan 1985:247). They opened a paper mill, a type foundry, and ran India's first steam engine to run the mill (Kesavan 1985:245; Laird 1968; Ramaseshan 1989:116–17). They also set up an extensive system of elementary schools, using Bell's monitorial system, prior to any government support (Laird 1968).

In 1813, British Evangelicals blocked the BEIC charter, forcing the BEIC both to allow British missionaries in British-controlled areas and to set aside money for Indian education. After this, multiple mission presses, Bible societies, and tract societies spread throughout the Indian sub-continent diffusing education, printed books, and newspapers. This prompted reactions from Hindus and Muslims. Protestant missionaries also trained the type-casters, compositors, teachers, etc., that staffed Hindu and Muslim presses and schools. The first Hindu printers developed in the penumbra of the Serampore Mission Press. "The Bengali elite did not fathom the importance of the invention of Bengali movable type ... because [merchant printers] designed [their] book[s] for a very limited clientele consisting of foreigners. Even the establishment of the Government

press did not excite the Bengali people: only when Serampore came on the scene did Bengal take notice of this seminal development” (Kesavan 1985:264). Scholars like Rammohan Roy and Ram Ram Basu, who worked closely with Serampore missionaries, are often credited with helping birth modern Bengali prose (Chakravorty 2004:206, 210; Khan 1976:11; Thangamuthu 2016:2610).

In 1818, the Serampore Mission printed the first magazine and newspaper in any South Asian language: the Bengali *Digdarsan* and *Samachar Durpan*. This prodded Hindus to respond with newspapers that focused on religious reform or critiqued missionaries. The first Indian newspaper owner/editor was Rammohan Roy, who previously worked with the Serampore missionaries translating the Bible into Bengali (Blackburn 2003:81; Natarajan 1955:12, 15, 18–19, 45; Vedalankar 1955:211–12).⁶³ Protestant missionaries also started the first newspapers in most of India’s major languages, e.g., Assamese, Kannada, Malayalam, Punjabi, Tamil, Telegu, etc. Other religious groups often started newspapers in response (Kesavan 1988:712; Khan 1984:342–43, 2001:26; Natarajan 1955:63–64, 179, 187, 190, 197, 201).⁶⁴

- (2) *Sri Lanka*: The pattern is identical in Sri Lanka. Protestant missionaries were the first to print in Tamil, the mother tongue of most Sri Lankan Hindus. In 1841, two Tamil Protestants printed the first Tamil newspaper. The first *Hindu* to print was Arumuga Navalar. He studied and taught at the Wesleyan Missionary School in Jaffna and worked at the *Jaffna Auxiliary Bible Society* helping translate the Bible, tracts, and hymns into Tamil (Bate 2021:47–49). However in 1847, missionaries admitted low-caste Hindus into their school. In response, Arumuga and other high-caste Hindus left the school, set up a Hindu school that excluded low-castes, and established the first Hindu press in Sri Lanka “to defend Hinduism from attacks by Christianity.” Arumuga hired workmen trained at the American Mission Press and began printing in 1850 (Hudson 1992:41–42; Kularatne 2006:xv). He also mirrored the missionary style of writing, using language accessible to ordinary people, expanding the use of punctuation, adding a space between words, etc. (Bate 2021:14, 46–47, 53–54). His influence on Tamil writing in India and Sri Lanka was significant enough that he is sometimes called the “father of Tamil prose” (Hellmann-Rajanayagam 1989). Hindu printing expanded rapidly in reaction to Protestant mission printing

⁶³ Additional inspiration may have come from English language newspapers via secondary diffusion. Many of these were printed with the assistants of Protestant missionaries (Blackburn 2003:78; Shaw 1987:10–11).

⁶⁴ Despite Sheldon Pollock’s emphasis on the rise of ‘vernaculars’ during the second millennium CE (2009), they were elite, trans-local courtly languages distinct from ordinary spoken language. The rise of writing linked to spoken vernaculars was primarily a 19th century phenomena (Tieken 2008:339, 379).

(Hudson 1992). Conversely, in Nepal and Bali, Protestant missionaries were excluded. Thus, printing and mass education developed later and slower.

(3) *Nepal*: In Nepal, Tantric Buddhists made paper and printed before European contact, but Hindus did not (Clemente 2018). Hindu Nepalis were exposed to printing via Catholic missionary books from 1715-1769 and later through interaction with the British. In 1816, Nepal lost a war with the BEIC, ceded much of their territory, and agreed to have a permanent British resident. Thus, Nepalis were aware of British technological prowess and the urgency of reform.

In 1821, Baptist missionaries printed the first Nepali book, the New Testament. Then the *Scottish Mission Orphanage Press* printed more careful and influential Bible translations in 1850 and following (Nida 1972:255–56, 320; Perry 1997:31, 38). The next year (1851), Nepal’s ruler Jang Bahadur Rana imported a printing press but mostly used it to print tickets, envelopes, and stamps.⁶⁵ Eventually, the Ranas printed books, but Christian missionaries were kept out of Nepal until 1951, and both Nepali book publishing and education floundered (Hutt 1984:214–16). By 1950 only 2% of Nepalis were literate (Barclay 2009:189; Whelpton 2005:167).

Nepali printing and writing style developed primarily in India and “the contribution of the Christian missionaries [and their converts] to the development of the Nepali language and literature was considerable” (Sarkar 2008:88).⁶⁶ Ganga Prasad Pradhan, a Nepali convert to Protestantism, worked with Protestant missionaries improving the Nepali translation of the Bible. Then in 1901, he bought the *Scottish Mission Orphanage Press* and formed the *Gurkah Press*. In addition to Christian books and tracts, he printed the first Nepali-language textbooks and the first Nepali-language newspaper, the *Gorkhe Khabar Kagat* (1901-1932).⁶⁷ Shortly afterwards, the Nepali government started an official gazette (Sarkar 2008:88) and high-caste Nepali exiles in Banaras/Varanasi began publishing periodicals (Chalmers 2003:113).⁶⁸

⁶⁵ The timing may be coincidental, but Nepal’s ruling family was savvy and would be aware of missionary printing.

⁶⁶ Christian texts are the second largest category of translations into Nepali (Bhattarai 2017:213).

⁶⁷ Other Nepali periodicals were short-lived, but *Gorkhe Khabar Kagat* was “by far the longest-lived Nepali periodical in pre-Independence India” (Chalmers 2004:141, 248). One source refers to an earlier literary journal, but it was not a newspaper and no copies survive. It is not clear if it was published or merely planned. If published, it was extremely short-lived (Hutt 1984:221, 228).

⁶⁸ These sources do not state that the periodicals were a response to Ganga Prasad, but they began shortly after his newspaper, and both groups were aware of printing by Protestant missionaries and Ganga Prasad. Many elite Nepali exiles who published in Banaras were also educated in mission schools (Dewan 1991; Whelpton 2005:167) and major Protestant mission presses in Banaras and neighboring cities increased both their exposure to printing and newspapers and the local availability of trained printers, etc. (Stark 2015; Vedalankar 1955:129–30). Still some sources ignore Ganga Prasad and missionary printing entirely (e.g., Rao and Koirala 2000).

Protestant Nepali writing mirrored spoken Nepali, whereas most Hindu Nepalis ‘ennobled’ Nepali with Sanskrit loan words and grammatical features, making it harder for non-elites to understand. They often framed Sanskritization as constraining Christian influence (Chalmers 2003:148). Sanskritized Nepali constrained the spread of literacy (Whelpton 2005:168).⁶⁹

- (4) *Bali*: Printing developed even more slowly in Bali. The Dutch colonized Indonesia in the 1700s and European traders and Chinese lived on Bali, but the Dutch blocked missionaries from working there. Both missionaries and colonial officials developed Balinese fonts and printed some texts elsewhere. But missionaries had difficulty distributing texts in Bali. Consequently, until after WWII, there was no printing and few bookshops in Bali (Hooykaas 1963).

Thus, exposure to Protestant missionary printing influenced when, what, and how Hindus printed. Hindu societies that had early exposure to Protestant missions printed books and newspapers earlier and expanded printing more rapidly. They standardized spelling and added punctuation earlier and shifted written language close to spoken language. The timing of exposure to religious competition, Catholic missions, European traders, European colonization, and military defeat to European powers did not matter, unless it influenced exposure to Protestant missions. The first translations of the Vedic texts into vernacular languages also happened in these contexts (Khan 1976:410, 428–29).

- c. *The Muslim World*: Multiple Muslim empires were wealthy and technologically sophisticated. As late as 1683 the Ottomans were able to invade Central Europe and lay siege to Vienna. Muslims copied papermaking and block printing from the Chinese in the 800s CE. Muslims printed amulets and hajj certificates across the Muslim world for hundreds of years. Some of this printing quoted the Quran in beautiful calligraphy using multiple colors (Aksoy and Milstein 2000; Schaefer 2006). Thus, Muslims could have printed books, including the Quran, but did not. In this article I highlight four contexts that shaped how Muslims began printing: 1) areas where Protestant missionaries worked, but were banned from converting Muslims; 2) areas

⁶⁹ Even Hindus who promoted Sanskritized Nepali often had close links with Protestant missionaries. Probably the most famous promoter of literary Nepali, Parasmani Pradhan, studied at a Church of Scotland mission school, and taught Nepali at the *Scottish University Mission Institute* (SUMI) in Kalimpong, i.e., the first secondary school classes in the Nepali language. While at SUMI, he wrote early Nepali language textbooks. He also set up the earliest associations (*Gokrho Sahitya Samaj* and *Sahitya Sammelan*) to promote Nepali as a literary language and to pressure the British to allow it to be studied in government schools. With his brothers, he founded the Mani Press (1928) to promote Nepali publishing (Chalmers 2003:182–83; Pradhan 1997:36; Whelpton 2005:168).

where Protestants could convert Muslims; 3) areas where Protestant missionaries were banned; and 4) areas with large Eastern Christian populations.

(1) *Areas Where Missionaries were Allowed, but Converting Muslims was Banned*: Iran is a typical example. Muslims in Iran used woodblock printing to make amulets and paper money. In 1307 an Iranian Muslim scholar made the first detailed description of Chinese book-printing (Allsen 2001:184). In 1629, Catholic missionaries imported the first European printing press to Iran, but did not use it. Armenian Christians first printed in Iran in 1637 (Bloom 2001:221), earlier than printing in the US or Canada. Yet, Iranian Muslims did not print any books until 1817.

Two events seem to have spurred this: Henry Martyn and Scottish missionaries in the Caucasus. The Protestant missionary Henry Martyn stayed in Iran for about a year perfecting his Persian translation of the New Testament. The crown prince, Abbas Mirza, commissioned a written ‘religious debate’ with Martyn, and Martyn sent him a copy of his Bible translation. Martyn tried to return to England to print his translation, but died on the way. The [Protestant initiated] Russian Bible Society (RBS) printed his translation in 1815 and the British and Foreign Bible Society (BFBS) did in 1816. About the same time, Scottish missionaries in the Caucasus began sending Persian Bible portions and tracts over the border into Persia.

In response, Abbas Mirza sent one person to the RBS for training and another to the BFBS. After returning to Persia with a press and fonts donated by the BFBS, these men introduced both printing and the first newspaper to Persia (Green 2009, 2015; O’Flynn 2017:134–67, 326–474; Thomas 2015:181–90, 205–6; Van Gorder 2010:124, 153, 166–67). However, Abbas Mirza died, the Russians both shut down the RBS and expelled all Protestant missionaries, and the Shah of Iran banned missionaries from working with Muslims. Subsequently, Persian printing grew slowly. Through the 19th century most printing was either artistic lithographs designed for elites or state-sponsored gazettes. Independent Persian-language newspapers and mass printing developed outside Iran, primarily in India, and were imported or smuggled into Persia. Literacy remained in the single digits into the early 20th century. In the 1920s when the government began public education, Iranians printers went to India to learn and import the new technology (Marashi 2015). Other societies that exhibit a similar pattern in the treatment of missionaries and in the development of printing are Morocco, Jordan, Palestine, Turkey, Zanzibar, Malaysia (excluding the Straights Settlements), and Indonesia.

(2) *Areas Where Missionaries were Allowed to Convert Muslims*: Muslims in India used paper, ink, and woodblocks for cloth-printing, but did not print books. They were exposed to European printing by Catholic missionaries and by British, French, Dutch, and Portuguese colonizers, but did not use it. Muslims began printing in the 19th century in response to Protestant missionaries conversionary printing (Robinson 2000:76–77). However unlike in Iran, the threat never abated, and Muslim printing expanded rapidly. By the 1850s, Muslims in India had printed over 1,000 titles, and by 1867 they were printing in most of the cities and major towns of the sub-continent. By the second half of the 19th century, Indian Muslims were exporting texts all over Asia and East Africa, including Iran (Bruce 2004; Green 2011; Robinson 2000:67, 76–79; Shaw 1987).

Similarly, in Malaysia, Indonesia, and Singapore the first Muslim printers either worked at Protestant missionary presses or learned to print at Protestant mission schools. The first Muslim to print books in Southeast Asia was Abdullah bin Abdul Kadir, who worked at several Protestant mission presses. The first book printed by a Muslim on a non-missionary press was a Quran printed in 1848; the printer was trained by Abdullah bin Abdul Kadir (Ishak 1992:1–67, 92; Ismail 1982; Proudfoot 1995; Putten 1997). The missionary Benjamin Peach Keasberry also trained his students to print and his students helped spread printing throughout Southeast Asia (Leow 2016:64–67; Liang 2009:32, 299, 321–27; Proudfoot 1994:8–10, 1998:124–29). Like India, Singapore became the center of Muslim printing in the region, exporting texts to surrounding areas with far larger Muslim populations (Proudfoot 1994:24–25, 27). Neither India or Singapore had been global centers of Muslim text production previously.

(3) *Areas Where Missionaries were Banned*: Mecca and Medina seem like logical places for mass printing. Muslims are supposed to make at least one pilgrimage to the holy sites in their lifetime. Even in the 19th century, huge numbers of Muslims arrived annually, creating a ready market for religious texts. Both cities were centers of Islamic learning and religious leaders spread their teachings throughout the Muslim world via manuscripts (Bahl 2018; Green 2017). However, missionaries were banned and printing began in Mecca and Medina in 1883 and 1885, respectively (Proudfoot 1995), decades after more obscure Muslim cities.

In other societies that excluded missionaries, printing also began late and expanded slowly, e.g., Afghanistan, Maldives, Oman, Kuwait, UAE, Qatar, Bahrain, Somalia, Yemen, Saudi Arabia, Djibouti, Libya, Brunei, Kazakhstan, Uzbekistan, Tajikistan, Turkmenistan, Mauritania, Niger, Mali, Northern Nigeria, Northern Ghana, Burkina Faso, Chad, etc. It did not matter

whether an area was colonized or not, or who the colonizer was - eleven of the areas listed above were British colonies or protectorates. If Protestant missionaries were excluded, printing began late, developed slowly, and was primarily controlled by the state. In these societies rulers typically introduced printing to publish official gazettes, stamps, letterhead, and/or courtly poetry. Non-state printing was rare.

Still, some nuance is necessary. Once printing began in Mecca and Medina, it expanded rapidly, especially in the 20th century. Books printed there had more prestige than books printed elsewhere and took market share from India and Singapore (Proudfoot 1994:34–36, 42). Protestant missionaries often found ways to smuggle texts into areas they could not go; this often goaded a response. For example, Afghanistan shared a border with British India. Protestant missionaries set up printing centers just across the border, printed Bibles, tracts, and primers in Pashtu, Balochi, Persian/Dari, etc., and exported them into Afghanistan. Afghan leaders even toured Protestant missionary printing facilities. Perhaps as a result, Afghans began printing in 1871 (Shaw 2012), over a decade before Mecca and Medina.

(4) *Areas with Large Eastern Christian Populations*: Lebanon and Egypt are distinct because of their large Eastern Christian populations. Arab Christians and former-Christians who had worked closely with Protestant missionaries were central figures in the Nahda (Arabic Awakening) and influenced the development of Modern Standard Arabic, e.g., Butrus al-Bustani, Faris al-Shidyaq. Arab Christians educated at mission schools dominated the early printing and newspaper industry in Egypt, Lebanon, and Turkey (Hourani 1983:97–102, 245–47). For example, in Egypt, the earliest Arabic newspapers were started by Christians.⁷⁰ In fact, 18 of the first 21 newspapers printed in Egypt were published and edited by Christians. Early Muslim editors were often graduates of mission schools (Hartmann 1899:3, 10, 16; Philipp 1985:xii). Lebanon and Egypt became the centers of Arabic language printing and media production.

d. *Summary of Printing in Theravada, Hindu, and Muslim Societies*: Theravada, Hindu, and Muslim societies stretch from insular Southeast Asia to Northwest Africa and are extremely diverse culturally, economically, politically, and geographically. Yet, how they began printing books and newspapers is consistent: (1) societies with early exposure to Protestant missions

⁷⁰ These are non-government newspapers. An earlier government gazette was initiated by Mohammad Ali, the Macedonian ruler of Egypt. However, the person who set up and ran the press, and most translators and staff were Christians (Adalian 1980; Heyworth-Dunne 1940, 1968:108–10, 127, 279–81; Schulze 1987:194)

printed early; societies with late exposure printed late; (2) groups Protestant missionaries were allowed to convert expanded printing rapidly and had a diverse independent press; groups they were banned from converting expanded printing slowly and had government gazettes. This is true even for different religious communities in the same country, e.g., compare Jews and Christians with Muslims in Iran and the Ottoman Empire.

There are countries that may not completely fit this pattern: i.e., Ottoman Turkey and Egypt. But even here, Protestantism and Eastern Christianity played crucial roles. The first Muslim to print outside of China was Ibrahim Mutefericca in 1729. Protestant missionaries did not spur this, but Mutefericca was a Hungarian Protestant convert to Islam and it took another 70 years for Muslims without Protestant backgrounds to print more than a few books (Erginbaş 2014:63–67, 82; Sabev 2018). Missionaries, Eastern Christians, and Protestant converts were important during the later expansion of Ottoman printing. Similarly, Muhammad Ali, the Macedonian Muslim ruler of Egypt, commissioned Arab Christians to set up the Bulaq Press in 1822 (Philipp 1985:67–72; Schulze 1987:194). Protestant missionaries were distributing Arabic Bibles and tracts in the region at the time (Darlow and Moule 1911:68–69; Roper 1988), but I do not know whether missionary printing influenced Muhammad Ali's decision and most of the relevant records were burned. Again it took decades for Egyptian Muslims outside the government to print. The shift to private printing and newspapers in Egypt was dominated by Arab Christians, many trained at mission schools (Hartmann 1899:3, 10, 16; Ibrahim 2013:196; Meinardus 2006; Philipp 1985:79, 98, 153). Thus, the two exceptions are still close to the general pattern.

Other theories about the origin and spread of printing don't generalize well. If new technology like metal presses or lithography made printing spread (Green 2010; Robinson 1993), we would expect a wave of printing in Asia and North Africa after their invention. We do not. In places like India and Southeast Asia where Muslims printed in response to Protestant missions, many used lithography, but Mecca and Medina did not print for another 60 years and used letterpress printing before lithography (Proudfoot 1994:42, 48). Similarly, if script complexity blocked printing (Robinson 1993), we would expect printing to spread rapidly after exposure to woodblock or lithographic printing. We do not.

If Ottoman decrees blocked printing (Rubin 2017), they would only block Muslims in the Ottoman Empire, but Muslims outside the Empire acted similarly, even Muslims in China and Tibet. Moreover, no one has found either a copy of 'the Sultan's ban' or a contemporary Muslim

reference to it (Schwartz 2017). If ‘strong religion’ blocked printing (Rubin 2017), religion would need to be weaker in *all* Christian, Jewish Tantric Buddhist, and Mahayana Buddhist societies, and stronger in *all* Muslim, Hindu and Theravada Buddhist societies. It was not. Moreover, we would expect the earliest printing to be secular, but it is almost always religious.

Of course, new technologies may have *eased* printing in areas that started printing for other reasons. However, new technologies don’t explain why the beginning of printing correlates so closely with the arrival of non-state Protestant missionaries, but not with the arrival of European merchants. Nor does technology explain why printing’s expansion-rate correlates so tightly with missionaries’ freedom to convert local people. Indian and Singaporean Muslims did not have earlier exposure to lithography than Moroccan or Iranian Muslims, but they started printing earlier than Moroccans and expanded printing more rapidly than both.

The threat of conversion was crucial. Protestant missionaries used mass vernacular printing, newspapers, and education to evangelize. Protestant printing used local scripts, accessible language, and mass distribution. This threatened religious elites, who responded with their own printing, newspapers, education, and translations.⁷¹ Protestant printing and education also created a supply of printers and teachers others used for their presses and schools. Printing by Jews and Eastern Christians was not a threat; because they usually printed in a different language and script than the majority and printed for internal consumption, not evangelizing.

Catholic missionaries tried to convert non-Christians, but seldom used printing or newspapers as a primary means. Prior to Protestant competition, Catholic missionaries typically printed few texts, with small print-runs, using Roman script, in centralized locations like Rome and Hong Kong. Centralization allowed bishops to give their imprimatur, but prevented people elsewhere from learning printing skills. Catholic printing typically targeted Eastern Christians, facilitated oral communication by new priests, or catechized converts (e.g., Chia 2011:279). It did not threaten the majority religious community.

Printing by European merchants and colonizers was mostly in foreign languages (particularly English) or classical languages (e.g., Sanskrit) and for consumption by foreigners. Their printing in local languages (e.g., Sanskrit or Persian) was also for foreign and elite consumption, e.g., grammars and dictionaries to facilitate language learning. Thus, it did not

⁷¹ The translation of the Quran and the Vedas into vernacular languages occurred almost entirely *after* the arrival of Protestant missionaries (Galewicz 2019, 2021; Khan 2001). I suspect the same is true for the Pāli cannon.

threaten local religious elites and was seldom copied.⁷² However, Protestant-background merchants and colonizers (i.e., British, Dutch, Danish, Swedish, German) were more likely to print books and newspapers than Catholic-background merchants and colonizers (i.e., Portuguese, Spanish, French, Belgian, and Italian).

Printing in Theravada, Hindu, and Muslim societies also reveals the unusual Protestant focus on translation and the vernacular. When other world religions spread, they typically spread a language, writing system, and book form. When empires spread, they also spread a language, writing system, and book form. Often empire and religion spread together. These sacred/imperial languages systematically replaced pre-existing languages and writing systems.⁷³ However, even in ‘Protestant’ colonies (i.e., British, Dutch, German, Danish, Swedish, US, etc.), Protestant missionaries actively printed and educated in vernacular languages using local scripts. Later, they often began ‘colonial-language’ education because of local pressure and government grants, but their default was the local languages using local scripts.

Interestingly, pre-mission written languages probably hampered the rapid spread of literacy. Literate societies had ‘sacred’/cosmopolitan languages distinct from spoken language. These stable, trans-local literary languages facilitated understanding of ancient texts and communication between courts and circles of elites. It took time either for non-elites to learn the ‘sacred’ language or for the written language to shift towards spoken language. Moreover, people from book-linked religions were less likely to convert, thus fewer became Protestant. Thus, Polynesian societies had close to universal literacy within decades of printing, Ottoman society took over two centuries to approach that.

However over time, the Protestant pattern diffused, and Protestantism no longer played a unique role in spurring printing. Muslim nationalist movements inspired other Muslim nationalist movements; Sufi printing sparked ‘orthodox’ Sunni responses. Increasingly, governments began mass education and either governments or private companies dominated the printing industry. Still, later developments do not negate the earlier religious roots of printing revolutions. Over time, religious ideas became part of ‘world culture’ and people forgot their religious origins. Moreover, once religious communities absorbed the start-up costs of creating written languages,

⁷² I only know one example: Parsis/Zoroastrians who worked at the *Bombay Courier* printed a Zoroastrian religious text (the *Khurdah Avesta*) prior to Protestant missionary activity in the area (Shaw 1987:10).

⁷³ For example, prior to the 19th century, Muslims did not adopt pre-Islamic writing systems, they replaced them with the Arabic script and replaced or modified the local language, e.g., Coptic is the remnant of the pre-Islamic language of Egypt. The only exception I am aware of is Muslims in China and Muslims never conquered China.

crafting fonts, developing consistent orthographies, composing textbooks, expanding education, accustoming people to printed texts, etc., then private companies moved in.

D. The Transformation of Printing through Protestant Missions: The Protestant ‘vernacular imperative’ also transformed how printing was used in East and Central Asia. East and Central Asias printed long before Europeans did, including with metal moveable-font type. However, it did not have the same transformative effects until the 19th and 20th century.

Moreover, Protestant missionaries initially used Chinese printing methods, i.e., woodblock printing, wooden moveable type, and individually carved metal type. In 1833 Samuel Dyer began casting a Chinese font, but missionary fonts were not competitive with woodblock printing until 1851, and did not transform East Asian printing until after William Gamble introduced electrotyping in 1860 (Su 2018:266; Wherry 1888). But even before 1833, Protestant missionaries used East Asian technology in radically new ways. By 1833 they had started the first four Chinese newspapers, the first in 1815 (Farnham 1890:720; Su 2018:264; Volz and Lee 2009:188–89). Protestant missionaries made the first frequency-count of Chinese characters, so they did not overproduce rare characters or underproduce common ones. They also created an organizational system to allow a pressman to reach all common characters without leaving their chair (Gotoh and Yokomizo 2002; Harkin 1957). These innovations did not require new technology, merely a new idea of how to use existing technology. East Asians invented moveable font type about 800 year earlier (well before Europe), but used it for small print runs and for texts with many repeated characters, such as genealogies. Imperial printing houses in China and Korea could afford large fonts and pay people to walk around a room collecting characters. Genealogists could create the small number of characters necessary for a family tree. But Protestant missionaries wanted inexpensive *mass* printing, so they innovated, radically reducing costs and facilitating a massive expansion of printing. Protestant missionaries and their East Asian co-workers also transformed the impact of printing by:

- 1) Popularizing phonetic writing systems, such as Korean *hangul*, regularizing spelling, and adding word spacing and punctuation (Hannas 1997:24, 39; King 1998, 2004; Traulsen 2012:103–4);⁷⁴

⁷⁴ Protestant Missionaries and Koreans who worked closely with them were crucial to popularizing Hangul, updating its orthography, and introducing word spacing and punctuation. There was nothing inevitable about the process (Ahn 2023; King 1998, 2004; Wells 2023). Catholic missionaries also used Hangul but had little impact on script reform (King 2004:8 n. 2)

- 2) Shifting writing away from foreign and classical languages toward vernacular spoken languages, e.g., the development and codification of modern Mandarin/*baihau* and Korean in the 1920s and 1930s mirrored language used in earlier Protestant missionary publications and was pioneered by people deeply influenced by missionaries. Even the idea that writing *should* reflect spoken language was new (King 2004; Kohiyama 2021; Mak 2017; Yuan 2009);
- 3) Initiating mass education of women and the poor, thus expanding the market for print (Lear 2009; Suh 2015);
- 4) Adding practical topics to education such as science, engineering, accounting, and agriculture (Dunch 2001, 2003; Johnson 2001);
- 5) Creating libraries that were open to the public, lent books, and allowed people to access the stacks. They also developed catalogue systems (equivalent to the Dewey decimal system) that allowed ordinary people to locate books efficiently (Liao 2006, 2009; Schneider 2009);
- 6) Developing the methods for creating fonts used in East Asia until the advent of computers (Gotoh and Yokomizo 2002; Komiyama 2019a).⁷⁵

I lack space to demonstrate how Protestant missions spurred each of these changes. Thus, I focus on how Protestant missionaries initiated and spread newspapers in East and Central Asia.

For centuries the Chinese government published a gazette of official regulations. High officials were required to subscribe. Later, Korea and Japan published government gazettes. East Asians also printed one-page fliers describing individual events, such as earthquakes, but these avoided politics and were not periodic. However, there were no privately-printed newspapers, and government gazettes did not create a “public sphere.” They did not critique the government or public policy; they promulgated official positions. The first periodical magazines and newspapers printed in any Asian language were published by Protestant missionaries.

Protestant missionaries’ centrality in birthing newspapers and magazines in China is well documented (Chen 2006; Hart 1901; Lent 1980; Volz and Lee 2009; T. Zhang 2007; X. Zhang 2007). They published the first newspaper in the Chinese language, the first newspaper printed in China, and ~95% of periodicals in China before 1890. As late as 1898, the Protestant missionary newspaper *Wanguo Gongbao* had a larger circulation than any other newspaper in the country, including subscriptions by many government leaders and Chinese reformers (T. Zhang 2007).

⁷⁵ The current Japanese numbering system for font sizes even copies the numbering for font sizes sold by the American Missionary Press in Shanghai (Komiyama 2019b; Miyasaka 2019).

Moreover, most of the earliest Chinese editors and owners of newspapers, e.g., Cai Er-Kang, Wang Tao, Shen Yugui, and Qian Xinbo, had previously worked with Protestant missionaries or became Christians while studying in the US (Bennett 1983:58; Gentz 2007:51–57; Rhoads 2011:151–53, 203–6, 261; Volz and Lee 2009:176; Yung 1939:23–24). Many also bought their presses and fonts from mission presses (Gentz 2007:56; Su 2018:271–75; Wolff 1978).

Protestant missionaries were also important to the emergence of the periodical press in Japan and Korea. When Japan and Korea still banned direct Europe contact, Japanese and Korea intellectuals imported Protestant mission newspapers via China. The Japanese government republished an edited version of mission newspapers⁷⁶ and distributed them to senior leaders – carefully removing Christian content (Altman 1965:23–27, 37, 41; De Lange 1998:24–26). Thus, when Japanese intellectuals first traveled abroad, many sought out Protestant missionaries and printing presses in Shanghai and Hong Kong (Fogel 2015; Liu 2003, 2009c, 2009b, 2010).⁷⁷

In Japan in 1864, Joseph Heco/Himada Hikoza edited and published the first privately-printed Japanese newspaper. He was a former shipwrecked fisherman who converted to Christianity in the US. Because Heco could not write Japanese, he worked with Kishida Ginkō and Honma Senzō, students and co-workers of the Protestant missionary James Curtis Hepburn (Huffman 1997:30–31; Lutz 2008:92–96; Munson 2012).⁷⁸ Kishida continued to publish a newspaper after Heco died in 1866 and founded a new one in 1868 as part of the first flowering of Japanese newsheets. Kishida was the first to write in a colloquial plain prose style “so that even farmers could read” the newspaper (Huffman 1997:30–40, 410; Murayama 2007:64). Protestants continued to play an oversized role in late Japanese journalism, especially among those critical of the state (Huffman 1997:244, 255, 295; Scheiner 2002).

⁷⁶ The series also included translations of a non-missionary Dutch newspaper from Indonesia, i.e., Protestant secondary diffusion.

⁷⁷ The desire of Japanese intellectuals to meet missionaries in China was not merely because of newspapers. It was also because of Chinese language books about Western science, technology, and institutions that missionaries published as pre-evangelistic tools. Initially, Japanese intellectuals were far more interested in missionary publications than Chinese intellectuals were. Thus, technical terms coined by missionaries and their Chinese colleagues first became popular in Japan. After the Japanese defeated Russia, Chinese students began studying in Japan, where they learned these neologisms and brought them back to China (Masini 2003).

⁷⁸ Kishida traveled with Hepburn to the American Missionary Press in Shanghai, where he met William Gamble and rescued Japanese sailors who worked at the press. He, and other Japanese who visited, learned about missionary periodicals, printing technology and Japanese fonts (Fogel 2003; Komiyama 2019a; Liu 2009a). The first foreigner to print a Japanese newspaper was the missionary/chaplain Rev. Buckworth Bailey in 1867 (Huffman 1997:410; Kawabé 1921:41). The first daily newspaper in Japan used font purchased from the *American Mission Press* in Shanghai and expanded the font using techniques taught by the missionary William Gamble (Ishizaki 2019).

Similarly, in Korea, Philip Jaisohn/Sŏ Chaep'p'il formed the Independence club and printed the first privately-printed Korean-language newspaper (the *Independent*).⁷⁹ He was a teacher at a Methodist mission school and published the *Independent* on the Methodist *Trilingual Press*. The mission provided trained printing staff free of charge and they continued to print the newspaper after Sŏ Chaep'p'il fled the country (Davis 1988). In fact, the first three independent Korean periodicals were all linked to the Independence club and published at the Methodist press (Weems 1971:176–77). The editor of the fourth Korean-language newspaper (*Cheguk Sinmun*) Syng-man Rhee, was a graduate of the Methodist school. The co-founder of the fifth, Namkung Ŏk became a Christian and a teacher at a Presbyterian women's school (Ehwa) (Academy of Korean Studies 2024). There are probably additional connections with Protestant missionaries I have not discovered, but missionary influence was pervasive.

British, America, and Japanese non-missionary printers also played a role in expanding newspapers, but they were far less influential. Moreover, they are interpretable as secondary diffusions via Protestant influence in the UK and US, and Protestant missionary influence on people like Fukuzawa Yukichi in Japan. Fukuzawa traveled to the US and had extensive contact with Protestant missionaries, even if he never converted.

Tantric Buddhist societies mirror the East Asian pattern. Both Tibetans and Bhutanese printed before Europeans did, but into the 20th century non-missionary printing was universally Buddhist (Bray 1988; Diemberger et al. 2016; Gyaltzen 2016; Sawerthal 2018). The first Tibetan-language newspaper was printed 1904-1910 by August Hermann Franke, a Moravian missionary (and reestablished 1927-1947, 1952-53).⁸⁰ The newspaper had little religious content, but Franke wanted to accustom Tibetans to reading non-Buddhist texts and to reading to learn information rather than to make merit (Beszterda 2014:239; Bray 1988:59). Similarly, the first Tibetan-language newspaper printed by a Tibetan (the *Melong*/Tibetan Mirror 1925-1963) was printed by a Moravian convert, Gergan Dorje Tharchin. The *Melong* was circulated in many regions of the Tibetan world (including Ladakh, Bhutan, Sikkim, and Lhasa), and included many elite Tibetan readers. The 13th & 14th Dalai Lama read it regularly and donated money to support it (Holmes-Tagchungdarpa 2014; Sawerthal 2018; Willock 2016).

⁷⁹ An earlier government gazette used Literary Sinitic (*Wenyen*) and mixed script (Literary Sinitic with Hangul markers to indicate Korean grammatical features). It was encouraged by the Japanese polymath Fukuzawa Yukichi and Korean students returning from Japan; both had significant contact with Protestant missionaries.

⁸⁰ The Moravians published a second newspaper, *Kyeland News*, 1927-1935.

However, both Bhutan⁸¹ and Tibet banned missionaries. Thus, missionaries worked from boarder-lands in China and India. Few Bhutanese or Tibetans converted and the religious elite was never threatened until the Chinese invaded Tibet in the 1950s (Shakya 2004:40). Thus, the first Tibetan ‘newspaper’ printed by a non-Protestant Tibetan was a government gazette, *Rawang* (Free Tibet). It was founded in 1962 by the Tibetan government-in-exile and edited by the Dalai Lama’s older brother (Beszterda 2014:239). Similarly, the first Bhutanese ‘newspaper’ was a government gazette founded in 1986 (Bowman 2000:387). Throughout East and Central Asia, the active use of printing for over a millennium was not sufficient to foster newspapers or a Habermasian public sphere.

IV. Conclusion:

Scholars often claim printing spurred nationalism, the public sphere, mass literacy, rapid scientific innovation, and so on (Anderson 2006; Eisenstein 1980; Habermas 1989; McLuhan et al. 2011; Van Zanden 2009). But none of these things happened in East Asia, Central Asia, or East Europe until hundreds of years after printing arrived (Elverskog 2016; Marker 1982; McDermott and Burke 2015). The Japanese printed for about 800 years before Catholic missionaries arrived, but in 1592 Catholic missionaries printed the first secular literature in the Japanese language (Kornicki 2000:122–27, 2013:609).⁸² Similarly, the Mongols printed long before Europeans, but this printing was primarily to make Buddhist merit and project state power. Thus, it had almost no social impact. Illiteracy was widespread, and there were no newspapers, no rapid technological change, etc. (Elverskog 2016). Technology alone was not sufficient to induce social change.

Thus, the social transformations scholars claim printing caused are only partially technical. Religious ideas shaped who considered printing valuable, how they used it, and what its consequences were. When religious groups used printing to proselytize, their competitors either printing or printing in new ways. We would expect the beginning of printing, the expansion-rate of printing, the rise of newspapers, etc. to have multiple causes and require statistical analysis to identify. However, the association between particular religions and these outcomes is so

⁸¹ The Bhutanese were as exposed to Protestant Tibetan-language printing as other Tibetans, despite the distinct name. The Bhutanese elite wrote in Classical Tibetan and Bhutan was much closer to Kalimpong (where the Tibetan Mirror was printed) than Lhasa is.

⁸² Japanese Zen Buddhist monks previously printed some “secular” Tang dynasty poems and Confucian texts but there were in Literary Sinitic and almost all without reading marks to help Japanese readers understanding the texts (Kornicki 2000:122–23).

consistent it is plausible to discuss necessary and sufficient conditions without narrow spatial or temporal restrictions. When Protestant missionaries were free to print and convert, their arrival was *sufficient* to initiate local printing, independent vernacular newspapers, public-facing libraries, education for women and the poor, and a shift in writing towards spoken language. No other factor was *sufficient* to cause these outcomes. Direct Protestant competition may not have been *necessary*. I have found a few examples where secondary diffusion is a more plausible explanation. However, before 1874, Protestant competition was close to necessary for many outcomes.

Scholars often claim printing transformed societies, but printing's impact was at best conjunctural. Printing enabled social transformations, but identical technology had different outcomes in different religious contexts. Thus, although economic development, the industrial revolution, democracy, nationalism, the public sphere, etc. have multiple causes, and a brief summary of 5,000 years of global history has unavoidable gaps, perhaps social scientists need to pay greater attention to religious beliefs and non-violent religious competition. Technological and economic development did not cause a singular, teleological, 'modernity.' There are multiple actual and possible 'modernities' we cannot understand without taking history, culture, and religion seriously.

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