White Magic

THE AGE OF PAPER

LOTHAR MÜLLER

White Magic

For E, C, and J

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The Age of Paper

Lothar Müller

Translated by Jessica Spengler

polity

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Contents

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PROLOGUE

The Microbe Experiment

On November 16, 1932, the French writer Paul Valéry gave a lecture at the Université des Annales in Paris entitled "La politique de l'esprit." In this lecture, he described the present day as a state of chaos which made it impossible to foresee the future. We live, he said, in a civilization based on a kind of trusteeship. Just as banks can only survive as long as all of their account holders do not try to withdraw their deposits at once, civilization can only exist as long as the imaginary resources sustaining it are not suddenly revoked. To illustrate civilization's "*structure fiduciaire*," its dependency on the interplay between trust and credit, Valéry proposed a thought experiment. It was not his idea, he said, but one borrowed from a review he had read long ago of a book by some English or American author whose name he had forgotten. Imagine, Valéry suggested, that a mysterious microbe attacked and swiftly annihilated all of the paper in the world. "No defense, no remedy; it is impossible to find any means of exterminating the microbe or of countering the physiochemical phenomenon attacking the cellulose. The unknown destroyer penetrates drawers and chests, reduces to dust the contents of our pocketbooks and our libraries; every written thing vanishes."[1]

At the time, Valéry knew nothing of the rapid deterioration of paper made from groundwood pulp. The purpose of his thought experiment was to draw attention not to the actual decay of paper but to the fact that paper is omnipresent and indispensable in modern civilization. He needed an image to illustrate a crisis in the ongoing self-preservation of civilization as a whole, not just of literature or the arts. This is why he referred to pocketbooks and

libraries in the same breath. He described the civilization around him as having paper coursing through its veins, with social institutions and routines dependent on paper. Imagine a world with no more paper, he said, with no more banknotes, bonds, files, laws, poems, or newspapers.

When Valéry gave his lecture, radio and gramophone technologies were still young and people had just begun to experiment with television. Even cinema, the telegraph, and the telephone had failed to replace paper as the key medium for storing and circulating words, images, and numbers. The tremendous destructive force of Valéry's hypothetical microbe highlighted the ubiquity and universality of paper in modern civilization. His thought experiment revealed all of the places that paper could be found.

The philosopher Jacques Derrida may have been familiar with Paul Valéry's lecture. In a long and very personal interview with the journal *Cahiers de Médiologie* at the end of the last century, in 1997, Derrida stripped the elements of fantasy from Valéry's microbe vision of the year 1932 and transformed the notion of paper's swift, sudden disintegration into a prediction that paper would gradually retreat from the universality that Valéry had in mind. Derrida said we are currently experiencing the kind of shrinkage that Balzac envisioned in his novel *La peau de chagrin*: just as the magical parchment inscribed with Arabic letters retracts in the novel, paper is shrinking and contracting in our world.[2]

Derrida was clever. He did not talk about the end, much less the "death," of paper. He expected paper to continue to have a massive presence in modern civilization even after the explosion of digital media. He only said that the age of paper's structural hegemony as a medium for images and symbols was drawing to a close—and when he spoke of the "*retraite*" or retreat of paper, he did not mean a retreat across the board, but a retreat from key positions.

Derrida had spent his whole life thinking about the written word. In the interview, he described how his writing hand would glide over a sheet of white paper; he talked about writing on a manual typewriter, then on an electric one, and finally on a computer; and he said that the overlapping transitions between these writing routines were a defining experience of his generation. But to both Derrida and Valéry, paper was more than just a writing surface. Derrida, too, talked about the merging of paper, money, and banking—about "*monnaie fiduciaire*," or paper money, and how it came to be replaced by credit cards and plastic. And he talked about the conflation of legal persons and "papers" in modern society and the problem of the "*sans-papiers*," the undocumented immigrants in France; in the eyes

of the state, I am whatever "my papers" identify me as, even if those papers are actually made of plastic.

This book picks up on Valéry's thought experiment, where the microbe acts as a detector revealing the universality of paper. At the same time, it follows up on Derrida's suggestion that we should contemplate the age of paper's expansion and structural hegemony from the perspective of its retreat.

When we talk about books, letters, and newspapers, we think we understand our world of origin; it exists in our general consciousness as the "Gutenberg era." But decisions go into the establishment of terms like this, and the decision behind the term "Gutenberg era" was to make the printing press, and thus the printed book, into the perspectival anchor of modern media theory. The Canadian media theorist Marshall McLuhan played a key role in popularizing this decision with best sellers such as *The Gutenberg Galaxy* (1962) and *Understanding Media* (1964). Both books portray the printing press as the mother of the modern world and the model for all "media revolutions." For all that historians have vigorously critiqued McLuhan's interpretation of printing and typography in recent decades, his ideas persist in our everyday understanding of the "Gutenberg world." For this reason, several passages in the book at hand analyze the "paper age" in the context of McLuhan's media theory.

Paper is older than the printing press, and its history encompasses far more than just the history of printed paper. Above all, paper is not merely inert matter or a passive object upon which the intellect expresses itself in the form of letters. "Paper, you know," Paul Valéry said in his lecture, "plays the part of a storage battery and a conductor; it conducts not only from one man to another but from one time to another, carrying a highly variable charge of authenticity or credibility."[3] It was not from the world of books that Valéry, the advocate for the mind, borrowed terminology for his incidental media theory of paper. By describing paper as an "*accumulateur*" (storage battery) and "*conducteur*" (conductor), he charged it with energy. This metaphorical electrification moved paper into the realm of batteries and circuits. The book at hand also takes the view that paper is a dynamically energized medium for storage and circulation.

Paper can be folded and creased, crumpled and cut, torn and burnt, covered with numbers, letters, and lines, filed away and pulled out again, mailed or concealed. It comes in a variety of formats and qualities, from notes to folios, from packing paper to decorative paper. The following account cannot compete with Valéry's microbe, which tracks down paper everywhere, in all of its forms. Instead, it

attempts to bring together three different ways of looking at paper. The first focuses on paper in its physical, material form, as a product of civilization, something which does not occur naturally in the world but instead requires a technology to produce it. This cursory history of paper technology is largely limited to a European-American perspective; it encompasses Arab paper as the direct precursor to European paper but only looks at Asian papermaking from afar. Every episode in the history of paper technology comes back to the question of how paper became a basic element of Western civilization and how it came to occupy such a key position in the world we think of as the "Gutenberg era."

This leads to the second way of looking at paper, namely, the way it appeared to Paul Valéry: as a storage battery and conductor. This book explores the cultural techniques, infrastructures, and routines in which paper functions as a medium for storing and circulating words, images, and numbers. The printing press is given its due as the single most significant entity in the paper age, but printed and unprinted paper are fundamentally placed on an equal footing. Writing paper appears throughout this book, and glances are thrown in the direction of the postal system which supplied the infrastructure necessary for circulating it. Just as Valéry mentioned libraries and pocketbooks in the same breath, this book looks not only at the blank sheets of authors and scholars but also at the correspondence and accounting techniques of merchants.

The third approach to paper involves looking at the paper age from the inside. Has this age developed an awareness of itself, and, if so, what characteristics does it attribute to paper when it turns its interpretive gaze inward? Paper is more than just a practical basic material; it is a metaphorical resource, a fact that can be seen in our everyday language when we refer to someone as a blank page, when we consider obligations to be honored on paper alone, or when we attempt to turn over a new leaf. Paper metaphors can be found throughout the history of science and ideas, from John Locke's comparison of the human mind with white paper to Saussure's description of the dual nature of linguistic signs as being like two sides of the same piece of paper. It goes without saying that this book can only touch on paper's long history as a material for reflection.

The avenues of exploration have been determined by this author's profession. As a literary scholar and newspaper journalist interested in cultural studies, I have focused in particular on the question of what modern European literature knows about the material from which it is made, as well as on the links between the history of paper technology and the emergence of periodicals. In doing so, I have

relied on the fact that, apart from its many other charms, modern literature has the advantage of being an exemplary chronicler of paper. The history of paper therefore goes hand in hand with the history of literature in this book. Art historians would have a different focus; their sights would be set on paper in the graphic arts since Albrecht Dürer and the use of paper in the collages of twentieth-century visual art. Social or economic historians, in turn, would describe the paper production landscapes of Italy, France, and central Europe and the paper trade in more detail; they would hone in on the trade relations and internal social structures of the old paper mills and the economy of eighteenth-century factories and industrial paper plants. Historians of everyday life could not recount the history of paper production without going into an equally detailed history of papermaking at home, in prisons, in factories and plants, and the diffusion of paper in the form of sacks and bags, envelopes and accounting books, and festival and party supplies.

The examples used in this book to illustrate the universality of paper—at least rudimentarily—were not chosen at random. The approach was driven by the author's overriding interest in paper as a medium for words and images, and it coalesces in a general thesis which states that by embedding our media origins in the paper age, we can better understand both the "Gutenberg era" from which we have come and the transitional period we now find ourselves in, as digital paper begins to compete with analog paper. The idea that the "age of books" and the "age of the internet" are in rigid opposition to each other—a view promulgated in talk shows and media debates throughout the first decade of the twenty-first century—is a product of our common understanding of the "Gutenberg era." The book at hand was written to counter the fixation on this supposed opposition, which prevents us from recognizing that the paper-based routines and cultural technologies which have shaped our infrastructures of knowledge, economics, leadership, the arts, and modern public life since the early modern era are antecedents to our digital storage and circulation media. Electronic media and our rapidly expanding digital infrastructure are transforming not just the "Gutenberg world" but the entire paper age. Paper is a virtuoso of substitution. By insinuating itself into existing patterns and routines, it was able to take over key roles in modern civilization, in banks and libraries, post offices and press agencies. It faced no serious competition until the age of the telephone and telegraph. But we have lived for some time now in a world where paper-based routines and cultural technologies, such as written communication over long distances, are being supplanted, supplemented, or transformed by their digital successors. Electronic

paper is getting better and better at mimicking its analog counterpart. Newsprint and book paper have accounted for a declining proportion of total paper production since the end of the twentieth century, and elegiac predictions concerning the future role of conventional paper are certainly not in short supply. At the same time, we generally have only a vague awareness of paper's history to date. But since origin stories sometimes tell us more about the future than predictions do, this book only turns its attention to electronic paper after recounting the tale of the analog paper age.

PART ONE

The Diffusion of Paper in Europe

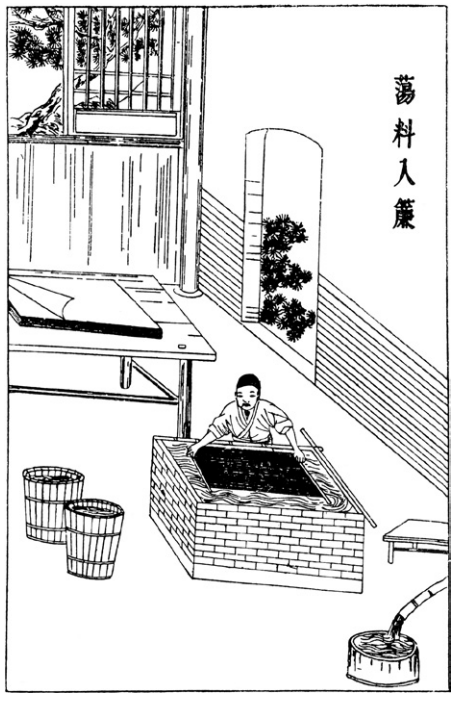
1

Leaves from Samarkand

1.1. The Arab Intermediate Realm

Paper is a protean substance. It not only refuses to be restricted to a single purpose, it also eludes any attempt to reliably pinpoint its origins. Its roots undoubtedly lie in China, but unlike the European printing press, it is not an invention that can be precisely dated. There is, of course, Ts'ai Lun, the high-ranking court official who, with the support of the emperor, introduced paper on a large scale as a less expensive writing material for administration in 105 AD. But the new material he presented was not an invention plucked from thin air; it was the result of improvements to an older production technique. Modern historians trying to trace the gradual, long-term development of papermaking have uncovered a kind of "proto-paper," derived from plant fibers, which was produced by imitating the methods used to make felt, as well as silk or cotton wadding—but this was still a long way from writing paper. Once a process has become established in the world, it can seem obvious in retrospect. In actuality, though, it must evolve step by step.[4]

Basic Chinese papermaking can be described as follows: "The raw material generally used by Chinese papermakers was the bast fiber of the paper mulberry, which was soaked in water with wood ash and then mechanically processed until the individual fibers separated. To make sheets of paper, screens were employed consisting of cotton or hemp fabric stretched on a wooden frame. The screen floated in water and the fibers were poured onto it from above and distributed evenly by hand. The screen was then lifted out of the water and set



Paper production in China. Woodcut by Sung Ying-Hsing, 1634

out to dry with the sheet of paper on it. Only afterwards could it be used for another pass. The daily output of a Chinese papermaker was therefore limited to just a few dozen sheets."[5]

Ts'ai Lun's primary improvement lay in the expansion of the resource base for paper production. According to a chronicle from 450 AD, it was Ts'ai Lun who had the idea to use pieces of hemp, textile scraps, and the remains of fishing nets in papermaking. Essentially, however, paper manufacture arose anonymously and gradually. As it proliferated in China, productivity increased with the introduction of flexible bamboo screens and a wide variety of applications for paper emerged. "It was not just a writing surface, it was used to make windows and doors, lanterns, paper flowers, fans and umbrellas. Toilet paper was produced on a massive scale as early as the ninth century, while paper money was a generally accepted means of payment in the tenth century."[6]

An old tale based on Arab sources describes the first movement of paper from the East to the West. The story says that during a battle

in the year 751 between the Arabs and Turkish troops, who fought with Chinese reinforcements, Chinese papermakers were taken prisoner by the Arabs. According to this account, the prisoners were brought from Taraz in Tashkent, the site of the battle, to Samarkand, where they were forced to reveal the secrets of their art. From that point on, paper was produced in and around Samarkand, which the Arabs had conquered in the early eighth century—paper that was in no way inferior to that of the Chinese.

What modern narratives of the history of paper take from this tale is that military conflicts in Central Asia may have accelerated a transfer that had probably begun centuries earlier. The acceleration and violent conquest of secret knowledge from the East as recounted in military history took place against the backdrop of the long-term east-to-west movement chronicled in the history of commerce. The Silk Road was pivotal to the transfer of paper. It was via the routes of the Silk Road that paper had reached Central Asia as a commodity long before Chinese prisoners of war could be forced to give up the secrets of its production. The Silk Road was also a paper road. From this perspective, papermaking was not so much a technology adopted on a specific date as it was a cultural technique that slowly seeped into the Arab world. The inclusion of Chinese paper in long-distance trade triggered the double step that generally takes place when exclusive knowledge is transferred in the form of goods: first a product is imported, then the ability to produce it. The high cost of importing goods over lengthy distances made this kind of double step attractive.

Arab papermakers may have initially continued to use floating screens until the "pour method" was gradually replaced by the dip method. But regardless of the specific modifications made to the technique for creating sheets of paper, Arab papermakers had to adapt the production process to the climatic conditions in their world: they had to keep water consumption to a minimum and find a replacement for the main raw material in Chinese paper, the inner bark of the paper mulberry. It was, above all, this pressure to adapt that pushed the rags, used textiles, and cordage which had at most played a supporting role in China to the center of Arab paper production.

This was the birth of a proto-model for the type of recycling in which a material—such as metal—is not just reclaimed from waste in a different form, but a new, structurally different material is created instead. Paper was henceforth a man-made substance constructed from raw materials that were, for their part, a product of civilization. Granted, even the paper mulberry trees of the Chinese and the papyrus

reeds of the Egyptians were not purely "products of nature" since the energies of the civilization around them flowed into their cultivation. But rag paper was free of the natural limits imposed on the propagation of both the paper mulberry native to subtropical southern China and the papyrus of Egypt. Its raw materials could be found wherever people lived, wore suitable clothing, and engaged in trade. Thanks to this freedom from natural, locally bound resources, paper was essentially in a position to spread universally. It took the nomadic nature it already possessed as a long-distance trade product and absorbed it into its material structure, offering little opposition to the surmounting of local production restrictions. As early as the eighth century, paper mills were built in Baghdad, then on the Arabian Peninsula, in Cairo, and in Syria, where paper was produced in Damascus, Tripoli (now in Lebanon), and Hama from the tenth century, and soon began to be exported as well. A Persian traveler in the eleventh century reported that traders in Cairo wrapped their wares in paper, and even in the tenth century, Syria was exporting not just paper to North Africa but also the art of papermaking.[7]

Though papermaking gradually lost its ties to natural raw materials as production shifted to raw materials that were themselves products of civilization, this certainly did not mean that its resource base was boundless. Its raw materials were obtained from cities and villages, not fields and forests, so from the Arab civilization of the Middle Ages until well into the nineteenth century, paper production remained closely linked to factors such as population development and textile production and, on account of its association with ropes and rigging, to the evolution of trade and seafaring.

The history of paper's arrival in Samarkand and its diffusion through the Arab empire was not traced in detail until the late nineteenth century. Joseph von Karabacek, an orientalist and director of the Imperial Library in Vienna, played a major role in this. His essay *Arab Paper* (1887) was based on the study of over 20,000 paper fragments, discovered in the winter of 1877–78 near the Middle Egyptian city of Al-Fayyum and in Hermopolis, which had entered the papyrus collection of Austrian Archduke Rainer. Karabacek translated the fragments dating from the eighth to the fourteenth century and described the wide variety of scripts, colors, and paper formats employed for administration. He mentioned as well the extraordinarily thin "bird paper" that was used for "pigeon post" correspondence and was also popular for love letters. Karabacek published his own translation of the *Umdat al-kuttab*, the only surviving eleventh-century Arabic treatise on papermaking. Finally, he presented a selection of the papers to the public in an exhibition and

assembled a catalog which documented paper's wide range of uses and geographic distribution.[8]

At the same time, the botanist Julius Wiesner was researching the material composition of Arab paper using microscopic methods developed for studying plant physiology. He published his findings parallel to Karabacek. The two worked independently of each other, but they followed the same hypothesis—namely, that the Arab world was not just a transit station on paper's journey from China to Western Europe, but that Arab civilization permanently changed the technique for making paper and, in doing so, made a substantial contribution to the upsurge in European paper mills from the thirteenth century onward. With polemical verve, Karabacek pursued his goal of demonstrating that Arab civilization was the source of "rag paper" made from linen scraps and hemp fibers and was therefore the model for European paper production. This parallel historical-antiquarian and scientific-microscopic analysis of Arab paper in Vienna received a few welcome critical responses from the experts, but it barely made an impression on the general consciousness of Europeans. In part, this was because Karabacek and Wiesner were not so much filling a gap in knowledge as they were breaking down an old transmission paradigm.

When Joseph von Karabacek called his essay on Arab paper a "historical and antiquarian enquiry," there was a programmatic accent on this subtitle. What he meant was that his work described Arab paper with the kind of methodological diligence and attention to detail that had previously been reserved for Greek and Roman antiquity. By placing Arab paper in the position of origin with respect to European paper—a position occupied by Chinese paper in Arab culture itself—Karabacek drew attention to a divide that had barely been perceived as such in Europe: the divide separating the European paper of the modern era from the papyrus of the ancient world.

In his commentary on the depiction of papyrus production in Book 13 of Pliny the Elder's *Natural History*, the American paper historian Dard Hunter highlighted the differences between the two writing materials. Papyrus used for writing is made by pasting together thin strips peeled from the core of the plant's stalk and laminating them to create a smooth writing surface, a process most comparable to very fine carpentry. Sheets of paper, on the other hand, are formed when the fibers of the raw material are disintegrated in water and the resulting suspension is scooped out to achieve the desired consistency.[9]

Since the name for paper is derived from the word papyrus (in English and other languages) and, conversely, papyrus was often

referred to as "Nile paper," it stood to reason that the European paper which flourished during the Renaissance and in humanism would be perceived as a direct descendant of the papyrus of ancient Greece and Rome and the two materials would be associated as a single unit. In translations of Pliny, the term papyrus was frequently used only in connection with the plant itself, while the product made from it was called paper. The parchment that was so bound up with Christianity and monastic culture, in turn, was the bridge between the papyrus of the ancient world and the paper of the modern one. This left merely a supporting role for Arab paper. Even well into the twentieth century, overviews of the history of paper reduced the centuries-long story of Arab paper to brief formulaic statements: "Knowledge of papermaking reached the West via the Arabs."[10]

When orientalists such as Joseph von Karabacek studied the source materials compiled in Europe in the eighteenth and nineteenth centuries following trips to the Orient and the archaeology boom, and when they began to look beyond Arab paper's function as an intermediary between China and Europe, it emerged that Europe was not the first place paper had taken hold despite strong competition. Paper faced two rivals in its role as a writing material and, in particular, as a medium for calligraphy when it arrived in the Arab world: papyrus and parchment. Parchment could coexist with the newcomer because it became a comparatively exclusive medium of transmission. But the arrival of paper heralded a continuous decline in papyrus production. The attempt to establish a papyrus industry in Baghdad decades after the construction of the first paper mills quickly ran aground. The ties to the Nile Valley that had spawned the Egyptian papyrus monopoly and made it so successful became a barrier in the face of nomadic paper, the quality of which continually improved as its popularity grew. Papyrus production ceased in Egypt in the eleventh century due in no small part to the economic advantages of paper, even though there was initially only a slight price difference and paper itself was also a costly commodity. Paper was able to achieve its first major victory over a rival writing material because the raw materials used to make it were no longer linked to natural growth cycles.[11]

The displacement of papyrus by paper was an early example of the pattern underlying paper's rise to prominence. Paper stepped in as a substitute in established economic and cultural functions and then stimulated further demand for itself by proving its capabilities. It was not responsible for the invention of the letter or of writing, for the creation of viziers or for calligraphy. Instead, it slipped into the gaps in communication systems, transmission media, and governance techniques by combining a nomadic existence in the geographic

Paper production in Egypt. Trading card from the Liebig Fleisch-Extrakt company, 1905

realm with a non-specific attachment to a variety of uses in the social realm. Its proponents in the Arab caliphates were also administrators, just as the high-ranking official Ts'ai Lun had been.

Under the Umayyad dynasty (661–750), which had conquered the Sasanian Empire of ancient Persia, the Arab domain stretched from the borders of China and India to North Africa and Spain. After the Abbasids came to power in 750, they moved the empire's capital east from Damascus to Baghdad, which was founded in 762. The young Islamic empire adopted administrative techniques from the conquered culture of Persia, and it inherited the legacy of ancient Greek science and philosophy from Byzantium.[12] The fledgling medium of paper was ideal for copying this Greek legacy into Arabic, and it was also attractive to the bureaucrats and state administrators of the Abbasid Caliphate. The historian and politician Ibn Khaldun (1332–1406) dated the administrative shift from parchment to paper to the rule of Caliph Harun al-Rashid between 786 and 809. Paper was an appealing option for administration, the legal system, and trade, not least because it was less susceptible to forgery than papyrus, where the writing could be wiped off, or parchment, where it could be scratched out.[13]

Ibn Khaldun considered the diffusion of paper to be an effect of the growing textualization of bureaucracy and the boom in

intellectual output in the Abbasid Caliphate. He also viewed it as a motivator for the emergence of chanceries and the evolution of literature and science. Nineteenth-century orientalists such as Joseph von Karabacek and Alfred von Kremer—the latter in his book *The Orient under the Caliphs* (1875)—adopted Ibn Khaldun's interpretation.[14] Current American research on Arab paper also picks up on this interpretation. It sheds light on the Arabic and Ottoman world, which was long assumed to have rejected the rapid adoption of the printing press, only reluctantly accepting it in the eighteenth century. Instead of studying the effects of the absence of the printing press, researchers are increasingly tracing the history of "paper before print"[15] in Arab culture.

1.2. Calligraphy and the Cairo Wastepaper Basket

Written words and numbers have never been tied exclusively to a single writing material in any civilization. Paper brought a swift demise to its rival papyrus in the Arab world, but as a medium for calligraphy it coexisted not only with parchment but also with flat stones, wood and bark, palm fronds and silk, brass and gold leaf, and other materials such as camel bones. It was additionally used to store sketches and drafts of designs that were later transferred to metal or other materials.[16] Above all, however, it was quickly accepted as a medium for copying the Koran. Papyrus and parchment are the only writing materials mentioned in the text of the Koran, but from the tenth century paper became the most important medium for disseminating the book itself in the Islamic world. It was ideal for the cursive scripts developed in the early tenth century by the secretary and calligrapher Ibn Muqla, who standardized the letterforms for various large writing surfaces using a geometric system of proportions.[17] Copying the Koran was considered a pious activity, like praying, and the ease of writing in cursive, where each letter is connected to the next, was kept in check by the rigors of calligraphy in order to prevent careless haste. Like parchment before it, the paper used for especially precious copies of the Koran was colored and finely decorated with gold. This decorated paper testified to the power of the Koran. The artistic recitation of the Koran was a sister art to calligraphy. In this union between the oral and written transmission of the prophet's words, recitation was a kind of acoustic calligraphy.[18]

People today usually encounter ancient Arab paper in the form of precious illuminated Koran manuscripts in museums and exhibitions

on medieval Islamic art. It is therefore associated primarily with calligraphy and book art. The decorative side of Arab paper generally overshadows its role in administration, law, commerce, and everyday life. An extensive corpus of such pragmatic writing was discovered in the late nineteenth century in Cairo in the ruins of the Ben Ezra Synagogue of ancient Fustat. Large parts of this collection found their way into various Western libraries in subsequent decades. From the 1960s the Jewish Arabist and historian Shelomo Dov Goitein systematically surveyed these materials in a monumental five-volume study which introduced them to the English-speaking world as the "Geniza documents."[19]

The documents consist of tens of thousands of pages and fragments, the majority stemming from between the tenth century and the second half of the thirteenth century. Nearly all of the documents are written on paper in the Arabic language but using Hebrew letters. The Jews of medieval Cairo did not live in a ghetto, so they interacted with Muslims on a daily basis and spoke the lingua franca of their world: Arabic. The word of God plays only a minor role in the Geniza documents, but the papers were preserved because Jews believed that Hebrew was the language of God and the holiness of the language extended to its characters. The paper was respected for the characters written on it, regardless of the content. The documents were saved not because they were intended to be passed on but because of an inhibition against destroying them.

The Geniza—a Hebrew word literally meaning "hidden," which referred to the windowless room in a synagogue for depositing papers retired from everyday use—was not an archive, as archives involve registries as well as criteria for exclusion. And though the documents included fragments of books, book catalogs with and without price lists, and lending slips, the Geniza was even less of a book depot or a library than it was an archive. If anything, it was more like a giant wastepaper basket where papers that had once belonged together were taken out of context and thrown into a chaos of miscellaneous sheets sharing only one abstract, general characteristic: they were covered with Hebrew characters. Just like a wastepaper basket, the Geniza was not a sealed, inaccessible space from which nothing returned; it was a place of interaction between the papers stored there and the passing generations. If necessary, papers which still had writing space on them could be retrieved and used again. Long-fulfilled contracts covering only one side of a page could be torn into pieces and turned into notes.

In the catalogs of older libraries in the West, these fragments were often classified as "business letters, and therefore valueless."

But Goitein was not fixated solely on the fragments of valuable manuscripts or books. Even when Joseph von Karabacek was pursuing his historical inquiry into the intermediate realm of Arab paper, his essays and exhibition included not only talismans inscribed with suras, pen and ink drawings of riders, or fragments of astrology books, but also receipts, land registries, and excerpts from tax records. Two generations later, Goitein employed cultural anthropology methods to reconstruct the world in which medieval Arab paper circulated.

Shelomo Dov Goitein was born under the name Fritz Goitein in 1900 in Bavaria. He came from a rabbinic family and was trained in the Talmud from an early age. Goitein studied Arabic and Islam under Joseph Horovitz in Frankfurt, and in 1923 he sailed on the same ship as Gershom Scholem from Trieste to Palestine, where he helped establish the Hebrew University in Jerusalem.[20] He first encountered the Geniza documents in 1948, and they became the focus of his research after he moved to the United States in 1957. After 1957 he lived in Princeton and socialized with the cultural anthropologist Clifford Geertz, who had written about both Balinese cockfighting and the economic system of the bazaar in Suq. In the epilogue to his great work *A Mediterranean Society: The Jewish Communities of the Arab World as Portrayed in the Documents of the Cairo Geniza* (1967–88), Goitein stressed the proximity of his "interpretative sociography" to the "interpretive anthropology" of Geertz.

Goitein viewed and analyzed the paper chaos of the Jewish Geniza as a source of information on the life of the Jews in Cairo and the wider society in which they lived. He pored over the wastepaper basket as if it were a centuries-spanning newspaper filled with reports from distant lands, local interest stories, and miscellany: "Almost every conceivable human relationship is represented in these records, and they often read like local news told by a gifted reporter."[21] From these marriage contracts and wills, waivers and court orders, business and private correspondence, and letters from people giving and receiving charity, Goitein pieced together the image of an urban civilization with a dense internal network of written communication and far-reaching external trade relations. In doing so, he revealed the multiplicity of inconspicuous and indispensable functions fulfilled by paper beyond the realm of calligraphy and book culture in medieval Arab society. He described paper formats and proved that merchants with business relations in India considered paper valuable enough to give as a gift, and that pilgrims to Jerusalem would record the stations of their pilgrimage on thin, strong, large-format paper with which

they then covered themselves at night as protection against evil—a testament to the belief in the magical power of paper.

Goitein occasionally noted that paper was made by a number of small enterprises as well as some larger ones in the Arab empire, but his reconstruction of everyday life in medieval Cairo did not include a history of Arab paper production. In passing, however, he illustrated the diffusion of paper technology to the western provinces of Tunisia, Spain, and Sicily, so his reconstruction signposts the routes by which Arab paper arrived in Europe.

1.3. In Scheherazade's World

The collection of tales now known as *The Thousand and One Nights* can be traced back to a core of pre-Islamic, Persian-Indian stories entitled "The Thousand Nights" (*Alf Layla*). The earliest reference to its later title, *Alf Layla wa-Layla*, comes from the Cairo Geniza. Goitein found this reference in the Bodleian Library in Oxford, in the notebook of a Jewish doctor who had also been a book dealer and notary. Around 1150, the doctor recorded the name of the person to whom he had lent *Alf Layla wa-Layla*.[22] No one with even a passing knowledge of the world of *The Thousand and One Nights* would be surprised to hear that these popular tales left their mark in the Geniza of ancient Cairo. The city of Cairo—a western counterpart to Baghdad, and even to far-off China—is one of the most prominent topographies in *The Thousand and One Nights*. Jewish doctors and Christian brokers alike can be found in both the Geniza and the tales of Scheherazade.

Caliph Harun al-Rashid was the link between these two spheres. As a historical figure he promoted the diffusion of paper—the medium of the Geniza fragments—and as a fictional figure he was immortalized on paper himself in *The Thousand and One Nights*.

The Jewish doctor wrote his lending note in the twelfth century, but other evidence indicates that Scheherazade's tales were committed to paper even earlier. The Oriental Institute of the University of Chicago has a fragment of a ninth-century codex, one of the oldest Arab papers in any international archive or library. When the fragment was written upon in 879, the book from which it was taken had already become wastepaper. A scribe by the name of Ahmad Ibn Mahfuz used it as scratch paper to practice writing phrases for notarizing legal documents. These marginalia on the fragile brownish fragment surround the title and first page of a manuscript of *Alf Layla* ("The Thousand Nights").[23] Experts reckon that the fragmentary

book is at least half a century older than the legal scribe's notes, meaning that it was written around the time of Harun al-Rashid's reign (786–809). This finding by paper experts fits with the hypothesis of literary historians who believe that the new writing material encouraged the spread of both the Koran and secular, popular Arab prose.[24]

The transcription and expansion of the narrative cosmos of *The Thousand and One Nights* took place over the course of centuries and ran parallel to the diffusion of paper from Samarkand to Baghdad, Damascus, Cairo, and beyond. As a medium for reproduction, paper promoted the circulation of the Koran. But in the case of *The Thousand and One Nights*, paper was a medium for the successive production of the text itself. It accommodated both the Arabization of the original Persian-Indian material and the continual addition of new tales to the corpus. Since the stories in *The Thousand and One Nights* have no identifiable author, collector, or editor—unlike the German fairy tales compiled by the Brothers Grimm, for example—the text corpus was always in flux. Just like old papers were pulled out of the Geniza and overwritten, old stories were pulled out and overwritten in *The Thousand and One Nights*. The Frenchman Antoine Galland introduced Europeans to *The Thousand and One Nights* in the early eighteenth century, but his source manuscript had not been written until the second half of the fifteenth century.

Considering that the diffusion of paper in Arab culture and the development of the narrative cosmos of *The Thousand and One Nights* ran parallel to each other for so long, it seems reasonable to ask whether paper transcended its role as a transmission medium to become a literary subject and motif in Scheherazade's tales. After all, many episodes in *The Thousand and One Nights* are a mythic-poetic monument to the blossoming literary culture of Baghdad under Caliph Harun al-Rashid, and books and writing are often associated with magic in the tales. In Scheherazade's stories, the Abbasid Caliph appears as a legendary ruler who wanders through Baghdad at night and experiences numerous adventures. He is also a man of books and letters, however.[25] In one of the tales, he visits a library in Baghdad, takes a book at random, starts to read, bursts into laughter and tears, and then banishes his faithful vizier Ja'afar from his sight, prompting the distraught Ja'afar to flee to Damascus. After encountering many adventures there, Ja'afar returns to Baghdad, where the Caliph leads him to the library and hands him the book that had originally provoked his sorrow and mirth. In this book, Ja'afar finds a detailed account of his own adventure in Damascus. What the Caliph read in Baghdad thus becomes a self-fulfilling prophecy. The culture of writing repeatedly appears in this form and others in the tales.