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The Earliest Known Hebrew Illuminated Pentateuch

Ṣan'ā, Yemen, 1206 CE (JTS L64, L64a)

I. Introduction

Yemenite Hebrew Illuminated Bibles are famous. However, those from the 13th century were never researched. The aim of this article is in respect of the earliest known Illuminated Pentateuch, Ṣan'ā 1206, now in the JTS, New York, MSS L64 and L64a. I wish to shed light on its *art program*, from both a Jewish and Islamic perspective in Yemen, as well as, its relationship with the art of the Cairo Geniza community. Hebrew Bibles from Yemen are unique in preserving the old system of numbering years according to the Seleucid era (312/1 BCE).¹ The word ל'טשׁר indicates the said calendar system in Yemenite Hebrew Bibles. In the colophon of MS L64A, fol. 107r (Fig. 3), the year in which the scribe finished writing this Pentateuch was 1517 (1205/6 CE) of the Seleucid era. Hence, this Illuminated Pentateuch is the earliest Hebrew Illuminated Pentateuch from Ṣan'ā known to date.² So its importance lies in the fact that it is a prototype making it possible to compare it to early Hebrew Bibles from the Cairo Geniza community (9th–13th century), as well as, to latter Hebrew Illuminated Bibles from Ṣan'ā, 14th/15th centuries.

Are MSS L64 and L64a one Pentateuch codex? It would seem that MSS L64 and L64a are, indeed, one Pentateuch.³ Proof of which is based on the

¹ The *Seleucid era*, or what is also known as the *year of Alexander [the Great]*, was a system of numbering years in use by the Jews in the Seleucid Empire. It was common in the Jewish world until the 13th century. However, it continued to be used in Yemen much later. It is also mentioned in the Babylonian Talmud (*Avodah Zarah 10a*): "Said Rav Nahman: In the *Diaspora*, it is not permissible to count [the date in years] except only by the kings of the Grecians."

² I want to thank The Rare Books Library in The Jewish Theological Seminary, New York, that has been especially generous and helpful in sharing their knowledge and information with me. Most of all I want to give special thanks to Dr. Jay Rovner, the chief manuscript bibliographer of its library and Sharon Lieberman Mintz the curator of Jewish Art.

³ Dr. Rovner drew my attention to MSS L64a and L64 in Lutzki catalog of the JTS and to the note of the sellers, Lipa Schwager and David Fränkel, Vienna, Austria, from the end of the 19th or the beginning of the 20th century, showing that they had the Pentateuch already in two parts and offered them for sale as such. It is still an enigma how the two parts had arrived into their hands. Although bought in about 1920/30, both had been

biblical text itself and on the art program of the juxtaposed carpet pages (fully illuminated folios). It should be mentioned that the pencil numbers of the folios of MSS L64 and L64a are modern and present each as a separate manuscript (i.e. the pencil numbers of MS L64 are from fol. 1r, till fol. 92v. Those of MS L64a are from fol. 1r till fol. 108v). There is no continuity.

From the standpoint of the biblical text, the beginning of L64a has the exact word to continue the last word of L64. Together, they comprise the exact biblical verse of Exodus 40: 31: **וַיַּרְחַצּוּ מִמְנוּ מִשְׁהָ וְאַהֲרֹן וּבְנֵי אֹתְהָם וַיַּרְחַצּוּ מִמְנוּ מִשְׁהָ וְאַהֲרֹן וּבְנֵי**. It should be noted that **וְאַתָּ רָגִילֵיכֶם** are the last words in MS L64 (fol. 92v) and **מִשְׁהָ וְאַהֲרֹן וּבְנֵי** are the first words of MS L64a (fol. 2v). In my opinion, the original art program of MSS L64 and L64a had been shuffled, i.e. the original order of the folios had been changed in time, as the folios are detached. Nowadays, the seven carpet pages are in the following order: Three before the biblical text of MS L64 – 1v, 2v, and 3r; four after the biblical text of MS L64a – 107r, 107v, 108r, and 108v. All these seven folios are detached, either as a page or as folio, and with no logical artistic connection. Hence, the first target is to reorganize the folios in its original art program. Five out of the seven folios comprise three pages (each page comprises two folios: front – *recto* and back – *verso*) as follows: 3r and 3v, which is the opening text of Genesis, comprise a single page; 107r and 107v comprise a page; 108r and 108v comprise a page; but 1v stands alone; thus 2v.

II. The Original Art Program – L64

There is no doubt that the carpet page fol. 3r (Fig. 2) is in its original place, as its verso folio 3v is the opening biblical text of Genesis. As the first word of the carpet page fol. 3r is the exact continuation word of the last word of fol. 1v (Fig. 1), it is obvious that these two carpet pages must be in juxtaposition and are in their original place, as follows:

entered into the collection of the JTS in January 1986. Whilst preparing the catalog of the Biblical MSS. in the JTS collection (completed in 1961), Morris Lutzki marked the two as L64 and L64a. In 1984, Rabbi Judah Brumer, who compiled an inside catalog for the JTS specifically mentioned MS L64a as the continuation of MS L64. I hope that MSS L64 and L64a would be presented as one Pentateuch, as from the research point of view, this whole illuminated Pentateuch is of great value. To my knowledge, the only written material on MS L64 is by Karl Kaz (Kaz 1964, p. 136, Plate 25.). He dated this Pentateuch to 1581 CE with no explanation. He put it in the context of what he sees as Yemen-Ethiopia Art connections in the 14th/15th centuries.

זאת תורה אלהינו ברוך שמו ויתעלה זכו אשר צוה על יד שלוחו הנאמן בחירות ציר הצדך
 אבי כל הנביאים ראש כל החכמים משה בן עמרם בן קחת בן לוי בן יעקב בן יצחק בן
 אברהם אבינו עליו השלום ועל כל ביתו הצדיק והחסיד

Hence, the carpet page fol. 3r and 1v match each other and are the frontispieces to Genesis and the Pentateuch as a whole. They must juxtapose each other in order to comprise a fluent Declaration Text to the Pentateuch. That is clear out of the meaning of the Hebrew statement, starting with: **זאת תורה אלהינו**. From an art perspective, the Hebrew text here is the main composition and designed as the natural crystal of the diamond – i.e. a rhombus, as the target of the carpet pages fol. 1v and 3r is to focus the eyes on the statement: **זאת תורה אלהינו**.

Juxtaposing fol. 1v with 3r is an artistic method employed by the scribe to emphasize the fluent text and its idea. The size of each of the two carpet pages is about the size of A4 paper (21x29cm), so that the total measurements are 42cm in width and 29cm in length. The scribe had created the biggest textual format he could in order to show its importance. This is very important from the practical point of view, as well, as the light in the synagogue during the day was a natural light, whereas lighting the synagogue at night was provided by oil lamps. Both are soft light and not white and sharp as electric light nowadays. In addition to being big and bold-faced, the letters are painted in green and red colors. Green and red colors are 'complementary colors', the unique use of which is that by being juxtaposed, each color makes the other to look more intense and strong. That means that by painting the declaration text in green and red colors, the scribe focused the reader on the text. That explains the exclusive use of green and red in the entire art program of this Illuminated Pentateuch.

In contrast to the above mentioned carpet page fol. 2v (Fig. 7) seems to be out of place, as it separates these two carpet pages comprising the declaration text. Hence, here it is not its original place. However, it perfectly matches at the end of MS L64a, as to be shown. It also should be mentioned that the carpet pages fol. 2v is artificially glued here and it is not part of the original booklet. The original booklet was made by sewing the folios together, which is the method employed in creating booklets in parchment codex.

At this moment, according to the art program, three questions remain unsettled: Where is the original place of the carpet page fol. 2v? Is it to be juxtaposed with some other carpet page folio? If so, with which? The answer

leads us to MS L64a. The original place of the carpet page fol. 2v (MS L64) should be at the end of MS L64a. Here, it is to be juxtaposed with the carpet page fol. 108v (Fig. 6) as shown: The match is obvious, as each of the two folios is the copy of the other. These juxtaposed the carpet pages are the very last folios of the Pentateuch as a whole (MSS L64 and L64a).

How do we know that these illuminated juxtaposed carpet pages are the very last? How can we be sure that there are not other juxtaposed carpet pages – for example, fol. 107v and 108r (Figs. 4, 5)?

The answer is based on the carpet page colophon of fol. 107r (Fig. 3). The carpet page fol. 107v (Fig. 4) is the verso folio of that colophon, fol. 107r. That clearly causes MS L64a, fol. 108v and MS L64, fol. 2v, as juxtaposed carpet pages, to be placed just after the colophon. In addition, it is also clear that the carpet page fol. 107v should be placed after that colophon, as the quotation from Proverbs 23:23 on its top relates directly to the biblical text before: **אמת קנה ואל תמכור**. It also should be emphasized that the art program of MSS L64 and L64a, as one Illuminated Pentateuch, does not clash with any other art program, as nowadays all the relevant carpet pages of both MS L64 and MS L64a are detached, including that colophon.

III. The Pentateuch as a Whole

MSS L64 and L64a belong to the same Pentateuch codex. Their original art program is a scheme/formula of juxtaposed carpet pages as frontispieces and end pieces to the biblical text. Before Genesis there is one juxtaposed couplet. At the end of the biblical text is the colophon, displayed as a carpet page as well. Two couplets of juxtaposed carpet pages are placed just after the colophon. In short, the biblical text is centered between green/red art program of carpet pages. The carpet pages are of two distinguished types: diamond shape (rhombus) and four circles with a big one in the center. Both are also framed with a decorated rectangular frame in green and red. Such an art program is based on juxtaposition as a method. Each of the two juxtaposed types is distinguished: diamond shape before and after the biblical text (Figs. 1–3), whilst the circles are at the end of the Pentateuch (Figs. 4–7). The colophon, fol. 107r, is a carpet page as well and is juxtaposed with the summing up of the **פרשות** (*parasot*, weekly lections), fol. 106v. The colophon marks the end of the biblical text and is a diamond shape variation by being designed as a micrographic diagonal grid, whose intersecting lines create the diamonds (rhombuses).

IV. The Colophon: Beauty or Information?

This micrographic colophon is an 'Encode Colophon'. The scribe assumed that a person would know the right directions when reading the colophon, as would also know its biblical quotations by heart, as there are no references at all where these quotations were taken from (Fig. 3). Indeed, it is hard to decode it. In fact, this is the colophon's message. As it is the earliest known colophon of Hebrew Illuminated Bible from Ṣan'ā, it is important to show its decoded text. Therefore, it is presented here in full:

יזכה הכותב לחזות בنعم יי' ולבקר בהיכלו ווי אליהם ימל' לו על מה ששנה וטעה
כדכתייב שגיאות מי יבין מנסתרות נקי

קנה זאת תורה
אברהם הכהן [...] מממוני ומגינו
בירח תמוז שנת אלף וחמש מאות ושבע עשר ליטורי במדינה
צנעה [תחרוכ ותצדין] ותשתקכל קורתא ירושלים ויזכה להמאגי בה הוא וזרעיה
וזרע זרעיה כרכתייב לא ימוש ספר ההוראה הזה מפרק והגית בו יומם וליליה למען תשמור
5 לעשות כל הכתוב בוכי או תצליל או יתקינים עליו מקרה שכותב ואני
זאת בריחי אותך [אמר יי'] לא ימושו מפרק ומפי^י
[זרען] ויתקינים עמש [עליו מקרה שכותב] ברכבת
כהנים יברך יי' וישמרך יאך יי' פניו אליך ויהנך
10 ישא יי' פניו אליך ושם לך
שלום אנס [אמן נצח סלה]

וזאת התורה
אשר שם משה [תורה]
צוה לנו משה מורשה קהلت יעקב תורה יי' תמים
עדות יי' נאמנה מחייבת פתי פקדוי יי' ישראלים מש machi ל'ב
5 מצות יי' ברכה מאירת עינים יראת יי' תורה עומדת עד משפטי יי' אמרת צדקו ייחידי
הנחמים מזחוב
ומפה רב ומתקים מדבר ונפת צופים גם עבדך נזהר בהם בשמרם יעקב רב
שגיאות מי יבין מנסתרות נקי יהו ליזון אמרי פי והגין לבי לפניך יי'
צורי וגאלי [...]
לויית חן עטרת הפארת המגנן ארך
10 ימים בימינה בשמאליה
עשר וכבוד

The micrography is divided into two parts: The first line (יזכה וכו') designed as ^^^^^ lies outside the painted rectangular decorated frame. In contrast, inside this frame, twenty two lines are shaped as a diagonal grid, creating a diamond shaped carpet page. The micrographic line designed as ^^^^^^

along the top of the folio is not accidental. Such lines already appear in Arabic translations of Greek manuscripts.⁴ This line was made by the scribe, but he did not mention his name. He quotes fractions from Psalm 27:4, *שְׁגִיאוֹת מֵי בִּין לְחִזּוֹת בְּנֵעַם וְלִבְקָר בְּהִיכְלָוּ*, as well as from Psalm 19:13, *מְנֻסְתְּרוֹת נְקִנִּי*, and makes a fluent sentence out of these verses, which any one in the Jewish community of Ṣan'ā in 1206 would have known their biblical origins and their meanings.

The code in deciphering the micrographic diagonal grid colophon is in the direction of its reading. The grid is composed of two groups which differ by the direction of its reading. The direction of the first group – consisting of 11 lines – starts from the upper left corner of the frame to the lower right corner. Having done that, one then moves up to the upper right corner of the frame. From this corner, he proceeds to read the second group – consisting also of 11 lines – in the direction of the lower left corner (Fig. 3). Knowing this *secret* enables one to read the colophon and to disclose the information encoded within it. The information encoded in ll. 1–4 is about the owner, Abraham Ha-Cohen. From the fourth line onward, (ll. 4–8) the scribe blesses the owner of the codex, saying that he might be privileged to study the Pentateuch, as well as future generations that are to be born of him, and that God might be with him, just as it is quoted in Joshua 1:8. It is important to mention that the formula in this colophon, mentioning the place of its writing and the blessing given to study it for many years to come, appears in Aden, 1144 CE, in a Yemenite copy of the grammar book, *Kitāb al-Mustalhaq*, by R. Yonah ibn Janāḥ at the beginning of the 11th century:⁵

וכתב אלעזר בר אברהם נז בן אלישע בלבטה לנפהה במדינה עדן
האלים יזכה לקרות בו והוא ובנו ובנו בנו אמן וכן יהי רצון

El'azar the son of Abraham, may he rest in Paradise, the son of Elisha', wrote in his own handwriting for himself in the city of Aden.
May God grant him to read in it, he and his sons and his grandchildren. Amen, so may it be.

The second blessing (ll. 8–11) made by the scribe to the owner is a collective blessing, the Priestly Blessing (Numbers 6:23–27). All of the 11 lines in the second group are to be read from the upper right corner of the painted frame to the lower left corner, in which are quotations of blessings taken

⁴ As, for example, the Arabic version of the Greek physician Galen, *On Antidotes* (MS AaF10, f.5v, Vienna National Library), written ca. 1230 CE.

⁵ Lebedev 1996, p. 44.

from Deuteronomy, Psalms and Proverbs, exhortations of study and of keeping the Law and the reward for doing so. The first quotation happens to be the blessing with which Moses blessed each of the twelve tribes before his death and before their entering into the Promised Land (Deuteronomy 33:1ff.). The scribe quoted one sentence in order to incorporate within it the idea of studying God's divine Law, as also the blessing that is to be had thereby. The second quotation is with respect to certain qualities of the Law (Torah), as quoted in Psalm 19:8ff. The third quotation involves one's seeking to acquire the divine Law, as mentioned in Proverbs 4:9. The last quotation treats on the reward given by God for keeping the Law, as stated in Proverbs 3:16.

In conclusion, this diagonal micrographic grid encodes within it two levels – that which is revealed and that which is hidden. That which is revealed shows micrography in its beauty – a carpet page of diamonds; that which is hidden contains its information encoded within it, to be decoded only by he that knows the right direction in reading the micrography.

V. Art Sources: Ḫan'ā or Aden?

As mentioned above, this Pentateuch shows carpet pages in two types: a) diamond shape (rhombus) and b) four circles with a big one in the center. Was Ḫan'ā the main art center for these types, or was it Aden? In my opinion, Aden was the main art center of south Yemen, insofar that it was a port city which imported art, in general, and Jewish art, in particular, from the medieval Cairo Geniza community. This is clear, based upon the political situation in Yemen at the time. However, it is hard to give a very detailed account for various reasons: The Yemenite biographers were focused on wars and troop movements, rather than on art. There were several Islamic religious groups in Yemen at the time.⁶ They mention Jews only in such cases as would directly involve them.⁷ Nevertheless, this is discussed here in three stages.

a. The Abbasid Caliphs in Iraq

Ḩan'ā was the seat of the governors appointed by the head of the Islamic community.⁸ That had some effect on art in Ḫan'ā, mainly on imported opulent art. For example, the remnants of the old wood-carved ceiling in

⁶ Rex Smith 1983, pp. 49b, 50a.

⁷ Tobi 1995, pp. 72–68.

⁸ Rex Smith 1983, 49b, 51a–57b.

the Great Mosque in Ṣan'ā.⁹ We may assume the existing of Hebrew Illuminated Bibles in Ṣan'ā on the basis of the wall paintings in the Dura Europus synagogue on the Euphrates river (today Syria) dated to 244 CE. Narkiss assumed the fresco painting were based on Late Antiquity Hebrew Illuminated manuscripts.¹⁰ That might place Hebrew Illuminated Bibles in Ṣan'ā with these Hebrew Illuminated manuscripts in the style of the scribing centers in Syria or Mesopotamia, i.e., Late Classical style or a Jewish variation of it. At the first half of the 11th century, al-Rāzī mentioned the synagogue of Ṣan'ā, called by Muslims *bayt al-yahūd*; No information on Hebrew Illuminated Bibles, neither on the synagogue itself, except its location in Ṣan'ā.¹¹

b. Up Till the Ayyūbī Dynasty

Appointing governors over Ṣan'ā was a hard task. Beginning with the mid-9th century, there were continuous problems in doing so. Given such difficulties, local dynasties fought to control Ṣan'ā. On the other hand, in 1087, the Ismā'īlī and Ṣulayhī dynasties that once ruled from Ṣan'ā over central and south Yemen, as well as over Aden (1045–1138), switched their capital from Ṣan'ā to Dhū Jiblah near Ta'izz in south west Yemen.¹² That political turning point caused Jews to move from Ṣan'ā to Dhū Jiblah.¹³ The Ṣulayhīs were oriented towards the Ismā'īlī Fātimī government in Egypt and maintained close commercial/cultural ties with them and with their luxurious art. As a result, we can assume a change in Jewish Art after connections with that opulent art via Aden as well as the Art of the Cairo Geniza Community. The Fātimīs (909–1171) made their wealth out of the east-west trade between India and Egypt and their control over gold resources in West Africa. The rulers of south Yemen took part in that trade and, as a result, also brought new art styles into Yemen. The Ismā'īlī Banū Zuray‘ tribe ruled Aden on behalf of the Ṣulayhīs from 1075 till the Ayyūbī took control of Aden in 1173.¹⁴ Their interest was to control the import/export businesses operating in Aden, imposing taxes and collecting it for the Ṣulayhīs.

Islamic sources mention that they renewed the taxation system in Aden, and nominated a Jew between the years 1152–1172 for the important role of chief coordinator/clerk for the city's merchants, mentioning his name

⁹ Serjeant 1983, pp. 340–341.

¹⁰ Narkiss 1992, p. 16, especially n. 5.

¹¹ Shavit and others 1983, p. 391b.

¹² Rex Smith 1983, pp. 55a–59b.

¹³ Goitein 1983, pp. 25, 55; Tobi 1995, pp. 93–94, notes 1–3.

¹⁴ Tobi 1995, pp. 94–95, note 3.

and official title **כלפון בן שמריה**. His Jewish name, was identified in the Cairo Geniza records.¹⁵ The Jewish side regarding the east-west trade and Aden is that very wealthy Jewish merchants belonging to the east-west trade chose Aden as their seat of operation. As a result, one from their numbers was nominated to be the **נגיד** – the head of the entire Jewish community in Yemen. That was not only an administration duty, but a religious one as well. For example, **ר' מצמון בן יפת בן בונדאר** (died in 1152), who is well known from the Cairo Geniza community records where he is mentioned regarding contracts and as having open-house for Jewish merchants, and who had intensive contacts with scholarly Jews in Egypt and even supported them. One of these institutions was **ישיבת גאון עזק**, which was transferred from the Land of Israel to Egypt. His son Halfon succeeded him as *Nagid*, as he himself had succeeded his father.

Although there is no specific information regarding Hebrew Illuminated Bibles from that time in Aden, it is presumed that they circulated between Aden and the Cairo Geniza community, whether for personal needs or as a donation to the synagogue in Aden or vice-versa.

c. Ayyūbī Art

The Ayyūbīs ruled Yemen, including Ṣan'ā, from 1173 till 1229 CE.¹⁶ They brought a centralized ruling system into Yemen, replacing its old tribal system. They built Zabīd as their capital and ruled over all of Yemen from Zabīd in the Tihāma in south-west Yemen. In 1173 they took Aden and annulled the conversion decree against the Jews of Aden which had been in force since 1165. The Ayyūbīs were Sunni Muslims and brought the Ismā'īlī dynasty in Yemen to an end, as they did to the Ismā'īlī Fātimī dynasty in Egypt in 1171. They were known for providing shelter to Jews who had escaped Islamic conversion decrees, such as Jews fleeing Spain and Morocco and, in our case, Aden.

They turned Zabīd, already a town of the Sunni school of thought with strong ties with India, into a Sunni international center and an important pilgrimage station on the main route to Mecca. Enterprising of *madrasas* (religious schools) and mosques and art in both was their religious way of spreading their Sunni ideas. For that purpose, they used Art, both indoor and outdoor, on religious and secular buildings, to be seen from afar. They imported art from Egypt. Among their architectural innovations in Yemen

¹⁵ Goitein 1983, pp. 44–69; Tobi 1995, pp. 94–95, note 3.

¹⁶ Rex Smith 1983, pp. 60b–64a.

were arches, domes and the intensive use of stucco, both indoor and outdoor. The *madrasa* with arches and domes was also an innovation of theirs in Yemen. They were generous builders, especially in Zabīd, the Tihāma and in south Yemen. Under their control, Ṣan'ā became an important military town against the Zaydī in the north, rather than an art center. Nowadays, almost no art has survived in Zabīd. This makes proof-finding hard to come by and compels me to use alternative means to substantiate the theory that art forms in Zabīd were the basis for art forms used in the Hebrew Illuminated Pentateuch from Ṣan'ā, 1206. As this Pentateuch was created under the Ayyūbī rule in Yemen, the main question is what was taken by the Jewish scribe from the art of Zabīd and how would he have applied the art innovations of Zabīd into this Pentateuch?

VI. The Natural Crystal of the Diamond: The First Art Type

The Ayyūbī minaret of the Great Mosque of Zabīd (pre-1200) shows the visual image of the natural crystal of the diamond [henceforth: NCD] as a rhombus with a dot in its center, all around the upper walls.¹⁷ That means the diamond shape was seen by nearly all travelers in the Tihāma and, hence, well known in south Yemen (Fig. 8). The NCD on the Great Mosque of Zabīd raises a question, *viz.*, had the Ayyūbīs ever specialized in importing NCD from India? At that time, India was the only source for NCD, and Aden was the most important trade station in its trade. Precious gem-stones were the top items in the east-west trade, being very much sought after, and ideal for trade via the sea in that it took up minimum space as cargo. We know for certain that NCD had been traded by the Rasūlī Sultans of Yemen (1229–1454), the successors of the Ayyūbīs. The NCD was personally exchanged as gifts by the family members of the Rasūlī Sultans. Specific prices of NCD had been mentioned in their documents, showing that they also used big NCD.¹⁸

None of the Rasūlī great mosques have been preserved, except the *minaret* of the Mosque al-Muẓaffarī of the Sultan al-Muẓaffar I (r. 1250–1295), in al-Mahgam, Tihāma.¹⁹ It shows the NCD all around. In our context, the minaret is very important, as it is a replica of the Ayyūbī minaret in the Great Mosque of Zabīd (pre-1200).²⁰ The latter shows the NCD on the

¹⁷ Finster 1992, p. 133.

¹⁸ Shamrookh 1993, chapter eight (www.aiys.org/webdate/archive.html).

¹⁹ Finster 1987, p. 255.

²⁰ Finster 1992, p. 133.

façade of the minaret and on the arches before the *qibla* (Figs. 8, 9). As for NCD in Yemen, there are seven basic facts that one should know:

1. Up until the 16th century, the NCD was not cut. It was traded and used in its natural crystal shape, just as it appears in nature – i.e. an octahedron shape.²¹
2. From an art perspective, the NCD was presented drawn with a view looking from top to bottom – a rhombus with a dot in its center.
3. The diamond is the hardest stone in nature.²² This fact has been known since antiquity. For example, the Hebrew Bible is the earliest written source presenting the NCD – *yahalom* (יהלום) and *shamir* – both stones having extraordinary hardness as its feature (Ex. 28:18, 39:11; Ezek. 3:9).
4. India was the exclusive supplier for the NCD up until the 19th century.²³
5. Aden was the chief emporium of trade in the Arabian Peninsula during antiquity, as well as during the Middle-Ages and period of the Renaissance, catering to imports from India into the Middle East.
6. Historical records show that Yemen was once famous for its trade in NCD. As a result, Greek and Roman historians mistakenly describe south Yemen as a source for NCD.
7. In nature, each precious gem-stone has a unique way of crystallizing. As a result, each gem-stone has its own unique shape and distinguishing features. The octahedron (eight-sided figure), or half octahedron, is a shape unique to NCD (Fig. 10).²⁴

All the aforementioned enables us to compare the NCD carpet page of the colophon, found in our Ṣan‘ā MS of 1206, with those of the Great Mosque of Zabīd. Juxtaposing the NCD carpet page shows how the NCD, as a Sunni 'brand', was implemented into Jewish art of 1206. It was not copied, but it was applied to Jewish art. (The way to apply it, rather than copy it, was by showing NCD as micrography.) It is important to note that, according to literary sources, the entire Koran had been inscribed on the wall of the Mosque al-Muẓaffarī in al-Mahgam. Perhaps, too, the Koran

²¹ Tolansky 1962, pp. 28–36.

²² The crystal system of the diamond is isometric (cubic); mainly octahedrons, also rhombic, dodecahedrons, cubes, twins. Our focus is on the octahedron as it is the most common. The author is also a gemologist.

²³ Schumann 1977, p. 72.

²⁴ The Viennese mineralogist Friedrich Mohs (1773–1839) invented the scratch hardness test. He defined scratch hardness as the resistance of a mineral when scratched with a pointed testing object. Mohs chose ten minerals of different hardness for comparison and graded these minerals one to ten. Ten is the hardest and it is the diamond. This table is used in gemology for testing the hardness of gem-stones.

was written on the Ayyūbī Great Mosque of Zabīd, though only the *minaret* has now survived. If that were the case, the Hebrew biblical text of the NCD carpet page colophon may have been the Jewish response to Yemeni art, as well as the Jewish art variation of the same (Fig. 3).

If, indeed, that were so, we may say that both Sunnī 'brands' – NCD and the holy text as a religious declaration – were implemented into the Jewish Art of 1206. The carpet page NCD colophon shows Hebrew and the Torah as the holy text and as a statement by the Jewish scribe who made a clear statement of his religion (Fig. 3). With all this, the scribe seems to have perfected a very contemporary form of Sunni art in Zabīd in the year 1206, even though he lived in Ṣan'ā and may or may not have ever visited Zabīd. The ability to be culturally and artistically involved in the contemporary art of Zabīd and to implement it into Jewish art is the key to understanding Jewish art in Ṣan'ā and Yemen under the Ayyūbīs.

VII. Cairo Geniza Community and Aden

Alternately, the carpet page NCD colophon could have been influenced by Hebrew Illuminated Bibles of the Cairo Geniza community of the 9th–12th centuries under the Fāṭimī and the Ayyūbī dynasties in Egypt (Fig. 3). For example, the fully illuminated micrographic carpet page written to מִבְרָך בָּנָן נַפְרָץ in Egypt, late 10th century (Fig. 11).²⁵ The juxtaposing of these two carpet pages shows the same concept of micrography NCD diagonal grid, creating a 'diamonds collection' (Figs. 3, 11). This is not surprising, as the common denominator for, both, the Ayyūbī and the Fāṭimī dynasties and the Cairo Geniza community, under both ruling powers, was the east-west trade via Aden, including the traffic in precious gem-stones, of which our concern here is the NCD. The juxtaposing also shows the difference in the Ṣan'ā Pentateuch. The NCD diagonal grid micrography was fully adapted, but not its frame. In the Cairo Geniza, the frame is made-up, likewise, of the Hebrew text. In contrast, the frame of the carpet page NCD diagonal colophon of the Ṣan'ā Pentateuch, 1206, shows a different attitude (Fig. 3). Here, the idea is a painted floral-like frame, of which the contrast between the alternating green and red colored areas in the background is the main theme. Such a contrast is an art method used to create an illusion of depth, as if the frame were a painted wood-carving.

²⁵ Leningrad Public Library, Firk. Heb. II. B. B. 629. Photo after: Narkiss 1990, p. 128.

Indeed, painted wood-carvings as an inside ceiling fixture was a luxury art in Yemen, especially in Ṣan‘ā, up until the 9th century. Whilst the flat roof was usually made of natural beams positioning one beside the other, an exquisitely carved and painted wood ceiling was fitted beneath this from the inside. Technically, the carved ceiling was made from carved strips of wood, attached together as frames fitting one inside the other.²⁶ We also see the like of such exquisitely shaped frames in the floral painted frame of the page carpet NCD diagonal colophon (Fig. 3). This means that the green and red floral-like frame of the Ṣan‘ā carpet page NCD diagonal colophon, 1206, bears witness to the use of exquisite art forms in Ṣan‘ā's past. Although we have no evidence about such ceilings in the synagogues of Ṣan‘ā, we may assume that such luxury art was adopted on the basis of this art in the synagogue of the Cairo Geniza. There was no wood ceiling in the synagogue of the Cairo Geniza, owing to its lack of a flat roof there, but we know for certain that many expensive carved wood panels had once decorated certain parts of the synagogue of the Cairo Geniza community.²⁷

The carpet page NCD diagonal colophon is a prototype example to the phenomenon in the 1206 Ṣan‘ā Pentateuch of merging together new and old art prototypes (Fig. 3). The new, being a micrography, originated in the art of the Cairo Geniza community and/or in the Ayyūbī art of Zabīd; whilst the old, being a painted wood-carved inside ceiling, had been typical to Ṣan‘ā some centuries before.

VIII. Four Circles with a Big One in the Center: The Second Art Type

As mentioned above, the Illuminated Pentateuch, the Ṣan‘ā manuscript of 1206, shows carpet pages in two types. The carpet page NCD diagonal colophon shows the NCD originating from Ayyūbī art in Zabīd or the art of the Cairo Geniza community, or both. As for the second type – four circles with a big one in the center – this may be a similar case (Figs. 4–7). The fully illuminated folio in micrography and gold medallions carpet page, made in Egypt in the 11th century and written for **מִבְרוֹךְ בֶּן צְדָקָה בֶּן יַוְנָה** **בֶּן צְלָח מִמְשָׁפְחַת בְּגָרוּדָה**,²⁸ shows four circles with a big one in the center (Fig. 12).²⁸ Its juxtaposition, with the four end pieces of carpet pages of Ṣan‘ā Pentateuch, 1206, shows the same composition and concept (Fig. 4–7). In

²⁶ Finster 1987, pp. 259, 262; photo in p. 259.

²⁷ Goitein 1964, pp. 85–86.

²⁸ Leningrad Public Library, Firk. Heb. II. 262. Photo after: Narkiss 1990, p. 68.

the **מִבְורֵךְ בְּן צְדָקָה** page carpet, the micrography written there is the Massorah, and the non-micrographic part is made-up of golden leaves (Fig. 12). The frame is a combination of the Massorah and gold leaves and NCD. The composition is in perfect balance, very delicate and fluffy, as though the carpet page is adorned with Fāṭimī gold jewels made of filigree, of the sort that is documented in the Cairo Geniza Community records. Few had survived and can be seen in museums, as, for example, in the Metropolitan Museum of Art, New York.²⁹

However, in addition to the composition and the balance, the four carpet pages end pieces in the Ṣan'ā Pentateuch, also show some other qualities of architecture (Figs. 4–7), based on that of Zabīd. Each of these carpet pages is an architectural-plan. i.e., a representation of three-dimensional objects on two flat dimensions – in our case, a painted parchment.

We should not forget that the ability to conceptualize and present three-dimensional spaces on a two-dimensional surface and to decode these representations is skill requiring extreme sophistication, one that has been honed in western countries since the period of Renaissance. The idea of executing such drawings on a two-dimensional surface – whether on parchment or on paper – was unique to scribes, geographers and mathematicians in Islamic countries until the 13th century. Learning how to do a thing by reading about it in a book, or in a manual, remains a distinctly modern practice, whereas builders did not use pattern-books neither manual in Islam.³⁰ Even though, in our case, all the four carpet pages of the Ṣan'ā Pentateuch, 1206, established a rare pattern-book of the art of architecture in Zabīd by presenting the composition of four circles with a big one in the center.

Here, the focus of the scribe was not on the geometrical constructions of the building, but rather on the three-dimensional white stucco relief of Zabīd's architecture (carved wet white gypsum) on either a flat or domed ceiling. Wisely, the scribe does not give us a full two-dimensional view of the three-dimensional art program of the stucco. Instead, he is only focusing on the presentation of the model unit of this art program, which is the concept of stucco. Stucco was applied and carved by casting wet gypsum into three-dimensional wood forms (pre-fabricated and attached to the ceiling). Once the model unit was ready, it served as a full-scale model for

²⁹ The Metropolitan Museum of Art, New York: 1979.278.2a,b. Gifts in memory of Richard Ettinghausen, and Harris Brisbane Dick Fund. 1915 (30.95.37) The Theodore M. Davis Collection, Bequest of Theodore M. Davis.

³⁰ Bloom 2001, pp. 161, 175.

erecting similar subsequent elements all over the flat or domed ceiling. The scribe shows a very detailed painted representation of the model unit – four circles with a big one in the center inside a rectangular frame. Actually, he gives uncommon, highly-detailed technical specifications: the lattice character of the technique, the white color of the stucco, the scale of size and proportions – everything is accounted for. The scribe's focus was on the white three-dimensional interlacing lattice stucco of the circles and their rectangular frame. He was very precise and gives enlarged details: *e.g.* the thicker, white parts of the stucco and the spaces between these parts, his placing of some parts either above or below, or where the imagery has been highlighted by shadow and where it has not, or where the stucco is and where the ceiling is. All this was done in order to give a clear, conceptual idea of the nature of his composition. It was as if he instructed himself, as well as the whole Jewish community, how this new medium – the stucco model unit – should be made and what it should look like.

The most striking feature of these four end pieces carpet pages is the wide and dense rectangular frame (Fig. 4–7). So, too, the lack of space between the circles and the frame stands out as a striking feature. The lack of space is an excellent indicator of the scribe's correct understanding of the artistic problem he is dealing with, *viz.* that of shortening. The problem of shortening exists here as result of the far distance between the location of the stucco on the ceiling and the location of the person who observes it from the ground. This problem is well-known later on in the Renaissance period regarding the human figures, mainly but not only. Here, we see its first appearance with geometrical constructions. These four carpet pages comprise a rare example of Jewish art in Şan'ā in the year 1206 and of the problems associated with this form of art. Shortening creates distortion of the shape and the proportion. In order to avoid such distortions, the stucco builder had to create much larger and thicker forms. This solution is precisely what is shown to us by the scribe in these four carpet pages. This is the reason why there is hardly any space between the circles and the frame and why the frame is so wide – almost equal to the diameter of each of the four small corner circles within it.

Actually, the scribe shows us how that composition – four circles with a big one in the center – was done on the ceiling itself, with its exaggeration, in order that it might be seen without any distortion from the ground. Perhaps this exaggerated model unit was also used in synagogues scattered

throughout south Yemen or in Aden, as perhaps also in Ṣan‘ā in 1206. If that were the case, the only thing the scribe had to do was to lift-up his eyes for taking 'snap-shots', as though he had a camera. If that were so, we have a two-dimensional painted documentation of the art program of a synagogue in 1206. It is clear from the carpet page NCD diagonal colophon that the scribe knows perfectly well how to paint a delicate rectangular frame in elegant proportions (Figs. 3, 4–7). This means that he deliberately chose to apply the new stucco art form of Zabīd into the carpet pages. In other words, he incorporated the art innovation of Zabīd – stucco – into the most important manuscript to him as a Jew – the Bible.

A close examination of the art program as a whole shows that he integrated the stucco as the main art feature, as it dominates the art program, excluding the carpet page NCD diagonal colophon (Figs. 1–7). Although the composition itself differs, the stucco tends to unify all the carpet pages. Hence, the art program of this Illuminated Pentateuch of Ṣan‘ā from 1206 is a rare visual source of information for understanding the art of Zabīd, as well as for understanding the art of the synagogue.³¹ These carpet pages should be treated as though they were color 'photographs' for documentary purposes (Figs. 1, 2, 4–7).

As for its composition – four circles with a big one in the center – the same composition is shown in the Ayyūbī ceramic lantern, in the Metropolitan Museum of Art, New York (Fig. 13). The lantern imitates an Ayyūbī building and, therefore, in our context, it should be examined from 'up to down' view. In so doing, the same composition is exposed – four circles with a big one in the center. As its origin is from Syria, the colors are not the green and red typical of Yemen. The lantern is also of great importance to us owing to its swirling circles, as similar swirling circles are painted in the last two carpet pages of the Ṣan‘ā Pentateuch, 1206 (Figs. 6–7).

IX. Maimonides

One of the questions asked is whether or not this Illuminated Pentateuch Ṣan‘ā 1206, reflects anything about that harsh conversion decree against the Jews of Aden in 1165, or its reversal by the Ayyūbīs in 1173? We

³¹ It should be emphasized that it was not necessarily the Ayyūbīs who invented the application of stucco in Zabīd, but rather, they turned it into the 'brand-name' of Zabīd, while, at the same time, initiating building projects there. Stucco is necessary in Zabīd to protect the bricks from erosion by the salty air of the Red Sea. The Ayyūbīs had turned this usage into the 'brand-name' of Zabīd.

know that the Jews of Yemen and the Cairo Geniza community maintained contacts long before Maimonides.³² Prior to the decree of 1165, of which the ruler of Aden at that time was עבד אלנבי אבן מהדי of the Banū Zuray‘, who passed a decree against the Jews of Aden to either convert to Islam or die. The *Nagid* at that time was either R. Nathaneal, the son of Rabbi Fayyūmī (who died that same year), or either his son R. Jacob. During the same period, a false Messiah had stood up to draw men astray. As for the decree, a question was addressed to Maimonides by the said R. Jacob. The question is no longer extant, neither is its date known. However, Maimonides' Judeo-Arabic response is well-known by the name, *The Epistle of Yemen* (אלרסתלה אלימנייה), and was sent in 1173/4, after the Ayyūbīs had taken control of Yemen. The Illuminated Pentateuch, unfortunately, shows no reference to that decree, neither to Maimonides.

It should also be noted that one of the questions the Cairo Geniza community had to deal with at the time was the Massorah (i.e. the tradition of orthography in the 24 canonical books), and after whose rulings they should go by, Ben Asher or Ben Naftali? The dispute is reflected in Hebrew Illuminated Bibles of the Cairo Geniza community in which micrography as an art form was not limited to biblical texts alone, but had been expanded to the Massorah as well (Fig. 12). Maimonides' verdict in that dispute is in accordance with Ben Asher:³³

וספר שסמכנו עליו בדברים אלו הוא הספר הידוע במצרים שהוא כולל ארבעה ועשרים
ספרים שהיה בירושלים מכמה שנים לגיה ממנה הספרים ועליו היו הכל סומכין לפוי
שהגיהו בן אשר ודקדק בו שנים הרבה והגיהו פעמים רבות כמו שהעתיקו ועליו סמכתי
בספר התורה שכתבתי כהכלתו.

The codex that we have relied upon in these matters is the well-known codex in Egypt, comprising twenty-four canonical books, [and] which was in Jerusalem for several years to proof-read the scrolls there from, and all [of Israel] used to rely upon it, since Ben Asher had proof-read it and scrutinized it for many years, and proof-read it many times, just as they had copied down. Now, upon it, I relied with regard to the book of the Law that I wrote, according to the rules which govern its proper writing.

This, too, is not reflected in the Illuminated Pentateuch, Ṣan‘ā 1206. On the contrary, it would only be reflected much later; for example, in the Illuminated Pentateuch of David, the son of Benaya the Scribe, written in Ṣan‘ā in the year 1490, wherein is found written at the end of Deuteronomy.³⁴

³² Qāfih 1976, p. 34.

³³ Maimonides, *Hilkhot Sefer Torah* 8:4.

³⁴ British Museum, London, Ms. Or. 2349.

הכל על תיקון הספר שהייתה במצרים שהגיהו בן אשר ודקך בו שנים ורבות כמו שהעתיקו

All has been done after the order prescribed by the book [of the Law] that was in Egypt, which Ben Asher had proof-read and scrupulously examined for many years, just as he had copied it down.

This means that sometime after 1206, yet before 1490, Maimonides' verdict was accepted by scribes in Ṣan'ā. Perhaps it was in Aden where they first accepted Ben Asher's orthography, only later to be applied in Ṣan'ā as well. Recognition of this renowned grammarian was usually placed before the colophon.

Such a trail, from Aden to Ṣan'ā, has already been proven with respect to the poem: *אמונה יוצרה אצלו אמנה*. The said poem, written in praise of the Torah and the reward for its study, used to be written at the end of the Pentateuch in Ṣan'ā until the end of the 15th century. We find, for example, the poem's insertion at the end of the above mentioned Pentateuch by David, the son of Benaya the Scribe. The poem, as noted, is said to have originated in Aden rather than in Ṣan'ā, by the Abraham ben Ḥalfon of the end of the 12th or the first half of the 13th century.³⁵

Analyzing matters which might shed light on the relationship of the Jews of Yemen with Maimonides is a tedious and slow process. Even though the Illuminated Pentateuch Ṣan'ā 1206 was written two years after the death of Maimonides, no mention is made of him, neither of the conversion decree in Aden in 1165, nor of Maimonides' response in 1173/4.

X. Summary

The art of the Cairo Geniza community and the art of Zabīd have, both, been the inspirational source for the art program of this Hebrew Illuminated Pentateuch, written in Ṣan'ā in 1206. There is not any contradiction between these two art sources, as the common denominator is the east-west trade, including precious gem-stones (Maimonides' brother, David, traded in such stones).³⁶ Moreover, the rule of the Fāṭimī/Ayyūbī in south Yemen, including Aden, had initiated a process of importing art innovations not previously known to Yemen. The other common denominator is geometry, considered as a science applied in art. The concept had originated in Baghdad in the 8th century as a result of Islamic enterprise of translation of

³⁵ Beit Arié 1977; Tobi 1991, especially pp. 47–48, 67–68, 77, 171–174.

³⁶ <http://www.knesset.gov.il/library/heb/docs/sif034.htm>; <http://jnul.huji.ac.il/v-xhibitions/rambam/heb/teiman.html>

important works into Arabic, such as the sciences of the Classical World, of which Greek geometry was most important.³⁷ The pick of geometry as international style in Islamic art happened in the 9th–10th centuries. However, in the 13th century it was still dominant.

From an architectural perspective in Yemen, the art program of this Illuminated Pentateuch (Şan'ā, 1206), is extremely important, as it bears witness to the Ayyūbī art innovations of that period as found in architecture in Zabīd. Nothing has survived of their art, as noted, except the Ayyūbī minaret in the Great Mosque of Zabīd (pre-1200). Likewise, none of the Rasūlī great mosques have been preserved, except the minaret in the Mosque al-Muẓaffarī in al-Mahgam of the Tihāma plains, and which is a replica of the Ayyūbī minaret in the Great Mosque of Zabīd.

In light of this evidence, the art program of this Illuminated Pentateuch has been compared with the art program of the Rasūlī fresco painting, in the religious architecture of south Yemen, as shown by the latest research on the Rasūlīs. The comparison shows that the art program of this Illuminated Pentateuch was repeated, either partially or fully, in the art program of the Rasūlī architecture of south Yemen. This means that the architectural art program of the Ayyūbīs, as reflected in the art program of this Pentateuch (1206), was a prototype mutual to, both, Jewish and Rasūlī art in Yemen. Thus, on one level, this Pentateuch is a rare example of Jewish art that reflects that of the Ayyūbīs in Yemen, while yet on another level, it is a reflection of Ayyūbī art as a source of inspiration for Rasūlī art in Yemen.

Bibliography

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|----------------|---|
| Beit Arié 1977 | מלacci בית-אריה, "אמונה יוצרת אצלו אמנה": שיר שנגנו להעתיקו בסוף כתבייריד של התורה בתימן. בתרוך: צבי מלacci (עורך), שי לויין: מחקרים בספרות העברית של ימי הביניים, עמ' 50–37. ירושלים |
| Bloom 2001 | Jonathan M. Bloom, <i>Paper before Print</i> . New Haven & London |
| Finster 1987 | Barbara Finster, The Architecture of the Rasulids. In: Werner Daum (ed.), <i>Three Thousand Years of Art and Civilisation in Arabia Felix</i> , pp. 254–264. Innsbruck |
| Finster 1992 | --, An Outline of the History of Islamic Religious Architecture in Yemen. In: Oleg Grabar (ed.), <i>Muqarnas IX, an Annual on Islamic Art and Architecture</i> , pp. 124–147. Leiden |

³⁷ Livio 2003, pp. 99–101.

Goitein 1964 שלמה דב גויטיין, בית-הכנסת וציוויל פִי כתבי-הגןזה. ארץ-ישראל ג', 97–81 ע'

Goitein 1983 --, התימנים: היסטוריה, סדרי חברה, ח'י הרוח – מבחר מחקרים. ערך: מנחם בן ששן. ירושלים

Lebedev 1996 ויקטור לבדב, כתבי יד ערביים-יהודים מתימן בספרות ורוסיה. תימא ה, עמ' 39–44

Livio 2003 מריו לביו, חיתוך הזהב. תל אביב

Qāfiḥ 1976 יוסף קאפק, קשורה של יהדות תימן עם מרכז היהדות. בתוך: ישראל ישעיהו ו יוסף טובי (עורכים), יהדות תימן: פרקי מחקר ועין, עמ' בט–מו. ירושלים

Katz 1964 קרל צז, השוואת בין כתבי-יד תימניים לכתב יד חבשי. ארץ-ישראל ג', עמ' 137–135, לוחות כג–כה

Narkiss 1990 בצלאל נרקיס, אירוי תנ"ך עבריים מלונינגרד. ירושלים

Narkiss 1992 --, כתבי-יד עברים ממצוירים. ירושלים

Sadek 1990 Noha Sadek, *Patronage and Architecture in Rasūlid Yemen, 626–858 A.H./1229–1454 A.D.* PhD thesis, University of Toronto. Toronto

Schumann 1977 Walter Schumann, *Gemstones of the World*. New York

Shamrookh 1993 Nayef Abdullah Shamrookh, The Commerce and Trade of the Rasulids in the Yemen, 630–858 / 1231–1454. Ph.D. thesis. University of Manchester

Rex Smith 1983 G. Rex Smith, The Early and Medieval History of Ṣan'ā ca. 622–1382. In: Serjeant-Lewcock 1983, pp. 49–67

Serjeant 1983 R.B. Serjeant, Mosques of Ṣan'ā: the Yemeni Islamic Setting. In: Serjeant-Lewcock 1983, pp. 310–350

Serjeant 1983a --, Ṣan'ā the 'Protected' Hijrah. In: Serjeant-Lewcock 1983, pp. 39–43

Serjeant- Lewcock 1983 R.B. Serjeant & Ronald Lewcock (eds.), *Ṣan'ā: An Arabian Islamic City*. London

Shivtiel & others 1983 Avihai Shivtiel, The Jews of Ṣan'ā. In: Serjeant-Lewcock 1983, pp. 391–431

Tobi 1991 יוסף טובי (מהדר), שיר אברם בן חלפון. תל אביב

Tobi 1995 --, ידיעות על היהודי תימן בחיבורים ערביים מתימן (א). פעמ' 64, עמ' 102–68

Tolansky 1962 Samuel Tolansky. *The History and Use of Diamond*. London

Yardeni 1997 Ada Yardeni, *The Book of Hebrew Script*. Jerusalem

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 Written to Abraham Ha-Cohen
 The Jewish Theological Seminary, New York, L64
 Courtesy of The Library of The Jewish Theological Seminary

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 Parchment. 21 X 29cm. Brown Ink. Green, Red, Ocher colors
 Written to Abraham Ha-Cohen
 The Jewish Theological Seminary, New York, L64a
 Courtesy of The Library of The Jewish Theological Seminary

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 Blue, Brown colors. Painted Glass
 23 x 12.7–15.2 cm
 The Metropolitan Museum of Art, New York, Edward C. Moore Collection,
 Bequest of Edward C. Moore, 1891 (91.1.138)