

ALPHABET, HEBREW.

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The origin of alphabetic script has always been a subject of human curiosity. According to Greek mythology, script was brought to Greece from Phoenicia. This tradition was accepted by the Greek and Roman writers, some of whom developed it even further, and stated that the Phoenicians learned the art of writing from the Egyptians. In the 19th century there were scholars who subscribed to the theory of the Egyptian origin, while others believed that the Phoenician script developed from the Akkadian cuneiform, Cretan linear, Cypriote syllabic, and Hittite hieroglyphic scripts.

## **NORTH-WEST SEMITIC**

### **The Proto-Canaanite and Cuneiform Canaanite Scripts**

Modern investigation into the origin of the alphabet began in 1905 with the discovery of the Proto-Sinaitic inscriptions by Sir Flinders Petrie at Sarabit al-Khadim in the Sinai Peninsula. These were short texts inscribed in an unknown pictographic script of approximately the middle of the second millennium B.C.E. The first steps toward decipherment of these texts were taken 12 years later by Sir Alan Gardiner, who noted a recurrent series—oxgoad (=Canaanite *lamd*); house (= *bayt*); Eye (= *ayn*); oxgoad (= *lamd*); cross (= *taw*)—and realized that if the signs followed an acrophonic principle, their parallel Canaanite value (*lamd-bayt-ayn-lamd-taw*) would be *lbt*—"for the lady" (goddess). Since then many attempts at decipherment have been made. The most eminent study is that of W. F. Albright, who believes that it is possible to identify 23 of the probable 27 letters occurring in these texts. Accepting Gardiner's Canaanite acrophonic theory and assuming that these texts are votive inscriptions written by West Semites who were employed by the Egyptians in the turquoise mines of Sarabit al-Khadim, Albright bases his readings on the recent knowledge of the Canaanite dialects (mainly Ugaritic) in the second millennium B.C.E.

### **AN EARLY PALESTINIAN EPIGRAPHIC CORPUS**

For several decades it was assumed that these West Semite workers (or slaves), while being in daily contact with the Egyptian hieroglyphs, invented the first alphabetic writing. However, at some sites in Palestine several similar pictographic inscriptions were found. Most of them are of a later date than the Proto-Sinaitic texts (mainly from Lachish, but also from Ha'i, Tell el-Amarna, Beth Shemesh, Megiddo), but at least three are earlier than the Proto-Sinaitic inscriptions (from Shechem, Gezer, and Lachish). This early Palestinian epigraphic corpus consists mainly of inscribed shards and jar inscriptions (partly fragmentary), but there are also inscriptions on seals, a dagger, and javelin heads. The latest specimens (from the end of the Late Bronze period and from the very beginning of the Iron age) display simplified linear letter forms which developed from the early pictographs. The script of these texts is called Proto-Canaanite. (See Chart: Hebrew Alphabet).

The order of the early alphabetic texts is suggested by F. M. Cross, Jr. as follows:

- I. The Proto-Canaanite Texts a. Old Palestinian (17th–12th century B.C.E.) b. Proto-Sinaitic (15th century B.C.E.)
- II. Canaanite Cuneiform Texts a. Ugaritic (14th–13th century B.C.E.) b. Palestinian (13th–12th century B.C.E.)

### **PROTO-CANAANITE SCRIPT AS THE SOURCE OF LATER ALPHABETS**

The Proto-Canaanite alphabet seems to copy some pictographic signs from the Egyptian hieroglyphs. Some Canaanite communities adapted the method of writing as in the Akkadian cuneiform syllabic script (i.e., clay tablet and stylus) to the new alphabetic system. Akkadian cuneiform was used in the latter half of the second millennium for international correspondence even between the Egyptian pharaoh and his vassals in Palestine (see el-Amarna). The cuneiform alphabet was not limited to Ugarit in northern Canaan; specimens of this script were found at three sites in Palestine (Beth-Shemesh, Taanach, and Nahal Tabor). However, whereas the

cuneiform alphabet, as far as is known, ceased to exist with the beginning of the Iron Age (12th century B.C.E.), the Proto-Canaanite script was the source of all alphabetic scripts which later spread throughout the entire world. From this script the Proto-Arabic script branched off in the course of the 13th century B.C.E. (This is the parent script of the South Arabic monumental and the Ethiopic script, as well as the Thamudic, Safaitic, and Lihyanic scripts.) The main offshoot of the Proto-Canaanite script, however, is the Phoenician, from which the (Ancient) Hebrew and Aramaic as well as the Greek alphabets evolved (figure 2).

### **THE TERM "ALPHABETIC SCRIPT"**

It has been alleged that the term "alphabetic" does not fit West Semitic writing. This script, using letters for consonantal phonemes (i.e., each sign represents a consonant plus any vowel (or "zero" vowel)) is, in I. J. Gelb's opinion a system of syllabic writing. While it is true that the West Semitic system of writing is a less developed stage than the Greek, the term alphabet itself does not mean that each letter must stand for either a consonant or a vowel, or for a consonant plus any vowel. Alphabet means a number of letters (20 or 30 approximately) listed in a fixed order, notwithstanding their found in Ugarit, belongs to the 14th century B.C.E., and its order (after omitting some letters) generally fits that of the Hebrew alphabet (figure 3). The reduction of the symbols to individual values. The first abecedary known until now, represent consonantal phonemes was a revolutionary step toward spreading literacy, and the systematic insertion of the vowel signs into the script was only a further, though important, step in this process. Therefore there is no reason to restrict the term alphabet to Greek or Latin scripts.

### **The Phoenician Script**

The Proto-Canaanite and the cuneiform alphabetic (as well as the South Arabic and the Classical, or North Arabic) scripts have 27–30 letters; the cuneiform also distinguishes between *alef*—a, *alef*—i, and *alef*—u. The Proto-Canaanite inscriptions were written either in vertical columns, in horizontal lines or, quite frequently, in boustrophedon. In the 11th century B.C.E., with the development of the linear letter forms, the stabilization of the right-to-left direction and the reduction of the number of letters to 22 consonants, the Proto-Canaanite developed into the Phoenician script. (The c. 1000 B.C.E. inscription on the Ahiiram sarcophagus found at Byblos displays this stage of evolution.) It seems likely that the Phoenician phonemic system consisted of 22 consonants; but the phonemic systems of the Hebrew and Aramaic languages were richer than that of the Phoenician language. When the Hebrews and Arameans adopted the Phoenician script they could not express in writing these phonemes which did not occur in Phoenician. In Hebrew, for example, there exists *shin* and *sin*, but both phonemes are designated by the same letter S; only in a relatively late period, with the invention of the diacritic signs, was it possible to distinguish between Q (*shin*) and R (*sin*).

The Phoenician people traded throughout the ancient world, and Phoenician inscriptions have been found as far apart as at Ur in the Persian Gulf and in Spain (figure 4). Most of these inscriptions, however, originated in Phoenicia, Cyprus, and Carthage. The Carthaginian inscriptions and those which were found in the western Phoenician colonies are called Punic inscriptions. While it is possible to distinguish between the dialects which were spoken in Phoenicia proper, in Cyprus, and in the Punic colonies, no special local characteristics in the scripts of the various centers developed. This one-trend evolution seems to be reflected in the scarce ink-written cursive material, but it is especially obvious in the many monumental (mainly votive) inscriptions. Whereas the Phoenician inscriptions of eastern origin after the third century B.C.E. are rare, the number of the Punic inscriptions (mainly from Carthage) increases in the late third and early second centuries until the destruction of Carthage in 146 B.C.E. It seems likely that in this period there developed in the west an independent cursive, which was later adapted to monumental writing by the neo-Punic communities existing in North Africa after 146 B.C.E. This is the neo-Punic script.

### **The Hebrew Script**

The Hebrews adopted the alphabetic script together with other cultural values from the Canaanites in the 12th or 11th century B.C.E. They followed the current Phoenician script until the ninth century, when they began to develop their own national script.

## **EARLY INSCRIPTIONS**

The Gezer Calendar is considered to be the earliest Hebrew inscription known. Its script resembles the scripts of the tenth century Phoenician inscriptions from Byblos. The spelling of two words reflects the contraction of the diphthong *ay*, which is either a Phoenician or a North Hebrew (cf. Samaria ostraca) linguistic feature. On paleographical grounds, the Gezer Calendar should be dated in the late tenth century B.C.E. (i.e., in the time of Solomon) when Gezer was an Israelite city (I Kings 9:16), and thereby determined as a Hebrew inscription (figure 5).

As strange as it may seem, the earliest clear Hebrew features can be discerned in the scripts of the ninth-century Moabite inscriptions, namely the stele of Mesha (the Moabite Stone) and in a recently found fragmentary stele where *km2yt*, the name of Mesha's father, is mentioned (for the Moabite script, see below).

As the eighth-century Hebrew inscriptions exhibit many specific and exclusive traits, it is obvious that in the ninth century the Hebrew script was written by wide scribal circles. The fact that up to the present almost no Hebrew inscriptions have been found from the ninth century is accidental, but the quantity of the epigraphic material from the eighth century onward shows a gradual increase of the spread of the knowledge of writing among the people of Israel and Judah.

## **DEVELOPMENT OF THE INDEPENDENT HEBREW SCRIPT**

The evolution of the independent Hebrew script is one of a specific cursive character: the further it diverges from the (Phoenician) mother script, the more it drops the lapidary features. This one-trend development is obvious in the eighth-century engraved inscriptions, namely the Siloam Inscription, the Royal Steward (figure 6), and other tomb inscriptions (all from Jerusalem), as well as from the fragmentary Hebrew inscription on an ivory which was taken as booty (probably from Samaria) to Nimrud, and the hundreds of the eighth to the sixth-century Hebrew seals from various sites. These inscriptions on hard material were written in a cursive style, copying even the shading, which is a natural feature of pen-and-ink writing. This lack of lapidary script may indicate that the custom of erecting stelae by the kings and offering votive inscriptions to the deity was not widespread in Israel. Such an assumption would explain how the specific lapidary element could disappear from the Hebrew script.

## **HEBREW EPIGRAPHIC MATERIALS**

There is some indication of the common use of papyrus. In addition to the seventh-century palimpsest papyrus, preserved in the dry climate of Wadi Murabbaat near the Dead Sea about 20 clay sealings of papyrus rolls have been found (mostly in Lachish).

The majority of the Hebrew epigraphic material which has been found is pottery. About 100 jar inscriptions are known today. Sixty jar handles, inscribed after firing, were found in Gibeon, and other jars bear inscriptions on their bodies. Some were incised or written in ink after firing, but others were inscribed before firing the vessels. These inscriptions are mainly the names of the owners or the names of those responsible for their capacity, and others indicate the measure of capacity (*bt lmlk*, "a royal *bat*"). Toward the end of the seventh century B.C.E. it became more usual to impress a seal on the jar handle rather than to write on the soft clay. Recently 80 "private" seal impressions of some 30 specimens and about 800 royal (*lmlk*) seals were listed (M. L. Heltzer, in: *Epigrafika Vostoka*, 17 (1965), 18–37).

The most important Hebrew epigraphic material consists, of course, of ostraca, some of which were incised (e.g., two dockets from Tell Qasile, a name-list and a message-like short letter from Samaria), but most were written in ink. The majority of ostraca were found in Samaria, Lachish, and Arad. This corpus, together with the Siloam Inscription and an ostrakon from Mezad Hashavyahu, are the most important sources for the study of the Hebrew language in the period of the First Temple.

## **SOURCES FOR THE HEBREW LANGUAGE IN THE FIRST TEMPLE PERIOD**

The Samaria ostraca consist of 63 dockets belonging to the eighth century B.C.E., probably to the time of Jeroboam II. They were found in the storage rooms of the royal palace and describe shipments of wine and oil brought in by farmers from various places, presumably as taxes. This

material is the main source for the study of the Hebrew dialect spoken in the Northern Kingdom, while the other material reflects the Judahite, or Jerusalemite, dialect.

The Siloam Inscription describes the building of the tunnel through which the water of the Gihon was brought into the city of Jerusalem, presumably in the time of Hezekiah (II Kings 20:20; II Chron. 32:30).

The ostrakon found at the seashore fortress called today Mezad Hashavyahu, near Yavneh Yam (Minat Rubin), is a letter written by a reaper who worked in the royal estate of Josiah, king of Judah. The reaper complained to the local governor of the confiscation of his garment (cf. Ex. 22:25–27; Deut. 24:10–13).

The Arad ostraca, which have only been partly published, were found in various levels of the eighth and seventh centuries. The published material from about 600 B.C.E. consists mainly of short messages dealing with supplies for the mercenaries employed in guarding the southern border of Judah (figure 7).

The 18 Lachish ostraca are letters sent by an officer to the governor of Lachish, who was probably in charge of the defense of the area, on the eve of the Babylonian conquest of Judah just before the destruction of the First Temple in 586 B.C.E. These ostraca reflect the most developed cursive hand (figure 8).

## **The Paleo-Hebrew Script**

The Hebrew script did not cease to exist after the Babylonian capture of Judah, when most of the nobles were taken into exile. It was used by the people who remained to work the fields; the sixth-century inscribed jar handles from Gibeon, on which the names of winegrowers are listed, are an example. However, from the fifth century onward, when the Aramaic language and script became an official means of communication, the Paleo-Hebrew script (i.e., the ancient Hebrew characters as used in the time of the Second Temple) was used for writing Hebrew both in Judah and Samaria. It was preserved mainly as a biblical book hand by a coterie of erudite scribes (presumably of the Zadokite priesthood; cf. the Paleo-Hebrew Pentateuch fragments found among the Dead Sea Scrolls). The vast majority of the Hasmonean coinage as well as the coins of the First and Second Jewish Revolts bears Paleo-Hebrew legends. Although this script is a relatively static, formal hand, it seems likely that the Hasmoneans did not revive a forgotten national script; they struck coins with legends of a known writing which survived—though in a narrow circle—in the period of the Second Temple.

Together with the discovery (in Wadi Daliyeh) of Aramaic deeds written on papyrus in Samaria in the fourth century B.C.E., two clay sealings with Hebrew texts written in the Paleo-Hebrew script, were found there without any Samaritan peculiarities. It seems likely that the divergence of the Samaritan script began sometime in the last two centuries of the first millennium B.C.E. The Samaritans continued to use this script for writing both Hebrew and Aramaic texts, but the Jews ceased using it after 135 C.E. A comparison of the earliest Samaritan inscriptions and the medieval and modern Samaritan manuscripts clearly indicates that the Samaritan script is a static script which was used mainly as a book hand (figure 9).

## **The Rise of the Aramaic Script**

The Arameans adopted the Phoenician script in the 11th or 10th century B.C.E. The first Aramaic monumental inscriptions originating in the Aramean kingdoms in the ninth and eighth centuries (Damascus, Hamat, and Samal) were written in the Phoenician script. The earliest clear Aramaic features are discernible in the cursive script of the mid-eighth century. In this period the Assyrians introduced the Aramaic language and script as a common means of communication among the various nations in the Assyrian Empire. Moreover, it became a *lingua franca* and was used from then on as a diplomatic and commercial language. For example, an Aramaic papyrus letter sent from Palestine about 600 B.C.E. was found at Saqqara in Egypt.

## **THE ARAMAIC SCRIPT COMPARED TO CONTEMPORARY PHOENICIAN AND HEBREW SCRIPTS**

A comparison of the Aramaic script of the Saqqara letter and other Aramaic cursive material of the same time with the contemporary Phoenician and Hebrew cursives (e.g., the Arad and the Lachish ostraca) is most instructive. (It should be remembered that the independent development of the Aramaic script began 100 years after that of the Hebrew.) The Aramaic script, omitting various bars, looks like shorthand in comparison with the Phoenician and particularly the Hebrew script. This phenomenon can be explained by the differing geopolitical and cultural factors prevailing among the respective peoples using the various scripts. The Phoenician script was relatively widely used among this trading people, but remained a national script. The conservative Hebrew script was developed by a nation tending to preserve its traditional values; from the late eighth century B.C.E. (the fall of Samaria) this script was more or less restricted to Judah and was written by a people dwelling in a mountainous land away from international highways. On the other hand the Aramaic script, written by many peoples, became a strictly practical means, stripped of all sentiment (figure 10).

## **The Moabite, Edomite, and Ammonite Scripts**

The inscriptions found in various sites in Transjordan provide a quite clear picture of the scripts used by the peoples living there and reflect their cultures.

The scripts of the ninth-century Moabite stelae—namely the Mesha stele and the fragmentary *km2yt* stele—display definite Hebrew characteristics, though their language is not Hebrew but Moabite (another Canaanite dialect, different in some aspects from Hebrew). Later Moabite inscriptions (mainly seals from the seventh and sixth centuries) show clear Aramaic letters written side by side with letters of Hebrew form or of specific local character. The inscriptions bearing Edomite theophoric names (e.g., *Qwsn*) found in Elath and in Umm al-Biyara near Petra, exhibit a similar state of affairs. The writing of the Moabites and the Edomites in the ninth century did not differ from that of the Hebrews, while in the late seventh and sixth centuries clear signs are to be found of the intrusion of Aramaic elements into these two scripts. This intrusion probably began in the last third of the eighth century B.C.E. when the political influence of Israel and Judah came to an end and the Assyrians appeared on the King's Highway south of Damascus.

The recently published ninth-century B.C.E. Amman citadel inscription shows that the Ammonites spoke in a Canaanite dialect (similar to Hebrew and Moabite) but adopted the Aramaic script from the Arameans who lived in Damascus. About a score of Ammonite seventh-century seals written in contemporary lapidary Aramaic indicate that the Ammonites followed the Aramaic scribal tradition common in the Assyrian Empire.

## **The Official Aramaic Script and Its Descendants**

Aramaic, being an official language of the Assyrian, neo-Babylonian, and Persian empires, was spoken and written in a vast area. Aramaic inscriptions have been found in Egypt, North Arabia, Palestine, Syria, Asia Minor, Mesopotamia, Persia, Afghanistan, and Pakistan. The examination of all this epigraphic material has shown that until the end of the third century B.C.E. (i.e., about 100 years after the fall of the Persian Empire) no local script developed and the Official Aramaic script remained a uniform script.

Many nations used Aramaic as a second language, and often it became the main spoken tongue. This was the situation in the fifth-century B.C.E. Jewish military colony in Elephantine, where over 100 Aramaic papyri and ostraca were found. This corpus—which is a main source for knowledge of the Official Aramaic language and script—consists of legal documents and private and official letters, as well as two Literary works. In the Persian period there existed an Aramaic lapidary script (cf. the fourth-century Judean jar-stamps), but the influence of the cursive hand was so strong that many inscriptions on hard material were written in the cursive style. The lapidary script died out in the late fourth century B.C.E. but the use of the standard Aramaic cursive went on for at least 100 years after the fall of the Persian Empire (330 B.C.E.). Aramaic was widely spoken and written and continued to flourish in various centers even in the Hellenistic period, when Greek became the official language.

## **THE DEVELOPMENT OF ARAMAIC LOCAL SCRIPTS**

In the third and second centuries B.C.E. local scripts began to develop from the Aramaic. In the West two national scripts were born, the Jewish (square Hebrew) and the Nabatean, while the eastern offshoots are many: Palmyrene, Syriac, Mandaic, as well as the local scripts of Hatra (Mesopotamia), Nisa (Turkmenistan), Armazi (Georgia), and Elymais (Khuzistan). The Jewish book hand became stabilized in the Herodian period, and it did not undergo essential alterations until the present. From the Nabatean cursive hand the North Arabic script developed. The eastern branches and their relations to each other have not yet been studied thoroughly, but the developments of some trends are quite clear. The script of the ostraca of the first century B.C.E. found at Nisa (a Parthian capital) is a transitional stage between Official Aramaic on the one hand and Parthian (Pahlavik), Persian (Parsic), Book-Pahlavi, and other scripts which were invented for Middle Iranian languages on the other hand. This writing also employed a system of Aramaic ideograms. The script of the inscriptions and a coin-legend of the Elymeans is the ancestor of the Mandaic writing. The Mandeans are a religious sect living in Khuzistan near the Persian Gulf who preserved an eastern Aramaic dialect resembling that of the Babylonian Talmud.

The earliest Syriac inscriptions stem from the first and second centuries C.E. This script was employed by Christians in Syria-Mesopotamia. There are three main Syriac styles of writing: the Estrangelo, which resembles the script of the early inscriptions, is formal; the Serto, ordinarily used by the Jacobites, is a developed cursive; the Nestorian hand is another cursive variation. Syriac is an Eastern Aramaic dialect spoken by the Christian communities in Edessa (modern Urfa) and its vicinity. However, although the Palestinian Christians spoke in a western Aramaic dialect, they adopted the Syriac script and wrote in a style similar to Estrangelo. The Manichaic script is an offshoot of Syriac; it was invented in the third century C.E. by Mani, the founder of the Manichean sect, as a book hand for writing religious manuscripts in a Middle Iranian dialect.

## **The Jewish Script**

The talmudic tradition (Sanh. 21b) ascribes the adoption of the Aramaic ("Assyrian") script to Ezra, who brought it from the Babylonian captivity. However Aramaic arrived in Judea also through the Babylonian and mainly through the Persian administrations. At any rate it became the colloquial language, at first of the educated classes and then of wider circles. It seems likely that in the Persian period the Aramaic script was used for writing Aramaic texts only, but the earliest Hebrew manuscripts found in Qumran are fragments of Exodus and Samuel, probably written in the second half of the third century B.C.E. in the Proto-Jewish script, which displays the earliest Jewish national development of the Official Aramaic script. From this period on the Paleo-Hebrew script was restricted to Hebrew texts, but the Jewish script was used both for Hebrew and Aramaic. (The Samaritan script—a descendant of Paleo-Hebrew—was employed both for Hebrew and the Western Aramaic dialect spoken by the Samaritans.)

The most important material for the study of the early evolution of the Jewish script are the scrolls from the Qumran caves and the other documents found in the caves of Wadi Murabbaat and Nahal Hever. The other material consists of tomb and ossuary inscriptions (mostly from Jerusalem) as well as some ostraca found mainly in Masada (where a scroll of the apocryphal Book of Ben Sire was also discovered) and at Herodium.

### **THE JEWISH CURSIVE HAND**

As the development of the formal book hand will be dealt with below (see below, Square Script), the earliest Jewish cursive will be considered here. This cursive hand began to develop in the Late Hasmonean and Early Herodian periods (cf. the Jason Tomb inscription from Jerusalem), and flourished in the time of the Second Revolt (132–135 C.E.). As in other cursive scripts the letters are generally rounded, and there is a tendency to join the letters. However there was not sufficient time for the development of a fully ligatured writing (e.g., Syriac, Mandaic, and North Arabic; figure 12). Several minor cursive inscriptions are among the inscribed ossuaries and on the ostraca, but most of them are known from the papyri, messages of Bar Kokhba and his officers, found in Nahal Hever and Wadi Murabbaat. The influence of this hand was strong enough to affect the formal hand. Therefore some biblical manuscripts and mainly legal documents were written in semiformal or semicursive styles. It seems likely that the cursive style ceased to exist

with Bar Kokhba's defeat or soon after it, while from the surviving Jewish book hand other cursive offshoots have been born.

See also entries on individual letters of the Hebrew alphabet.

**[Joseph Naveh]**

## ***CURSIVE SCRIPT***

It is only natural that letters, notes, business matters, legal documents, etc. should be written with less care and accuracy than books. The writer does not intend to reproduce exactly the letters of the formal script. His intent is to give the basic structure of the letters, that is, an approximation of the "ideal" forms. This is clearly illustrated by figure 1 (second century C.E.). in the course of time there is less and less approximation, i.e., changes take place. Unwittingly, to save time and effort, the writers omit certain details by linking individual strokes, which were formerly not linked, and by uniting or fusing certain strokes. The pace of such structural development is much faster than the changes in the square script, which, by comparison with the cursive, hardly moves at all. The result is the rise of a full fledged cursive style which can no longer, by any stretch of imagination, be called a simplified square. The changes that have taken place are so great that many letters have become utterly different from their counterparts in the square style. It should be mentioned that occasionally books are penned in cursive. Figure 2 (fifth–sixth centuries) is an early stage specimen. It contains a form that is decidedly cursive—the open *he*. This was not, at that time, a recent development; it had been in existence for centuries but it stayed outside formal writing until almost the end of the Middle Ages. The early cursive seems to have lasted until the eighth –tenth centuries, but further research and/or new material might change the present picture.

### ***PALESTINE-SYRIA TYPE***

The 11th-century Palestine-Syria type is a fully developed cursive style, although the connection with the square script is quite clear. In figure 3 (12th century) the right strokes of the *alef* are high up, and the left one practically always joins the top of the middle stroke; *bet* and *kaf* differ greatly; *lamed* consists of two strokes only; final *nun* is regularly joined to the preceding letter; the middle stroke of *shin* is a small horizontal curve joined to the top of the left stroke. Whether the modern script of the Palestinian-Syrian region (figure 4) is a continuation of the style shown in figure 3 cannot presently be established.

One special group of cursive in ancient Palestine is characteristic of the Negev. This writing (figure 5; second century) appears, at first glance, to be undecipherable and its connection with the square script could only be established with difficulty. Documents of this type dating from the second half of the first century B.C.E. until the end of the Bar Kokhba War are extant. The fact that it disappeared without a trace shows that it was not the general Jewish cursive.

### ***EGYPT TYPE***

In Egypt the early stage of the cursive style seems to reach into the eighth century. The fully developed cursive style dates from the ninth to tenth centuries. Figure 6 belongs to the fifth century, figure 7 to the eighth, figure 8 to the 11th; in the latter, the *alef* appears in two forms at the same time—regular and cursive—and the final *nun* is written separately; generally the left downstroke of the *tav* is hardly severed from the top stroke. Four centuries later (figure 9) the *alef* is more cursive; final *he* is joined to the preceding letter and is a long inverted S-wave: the right and left downstrokes have been linked, in consequence of which the left one has been dragged down to a position below the line bottom; the same has happened, in most cases, to *tav* but there the linking stroke has not disappeared into the wavy line.

### ***BABYLON TYPE***

The early stage of the Babylonian cursive is represented by the fifth/sixth century incantation bowls (figure 10). The earliest available example of the fully developed cursive style (figure 11) belongs to the 11th century. *Alef* has the structure of K in the Roman alphabet. In the modern cursive (figure 12) many letters are very far removed from their original forms, e.g., *alef*, *gimmel*,

*he, tet*, etc.; the original top and right strokes of *tav* have been merged into the top of the left stroke, which runs very far down and finally bends leftward, sweeping still further in that direction.

### **PARSIC TYPE**

The earliest specimens of the Parsic type (figure 13; 11th century) show a fully developed cursive style. *Alef* has both the K—and the N—form; in *he* and *tav* there is no tendency toward a linking up of the two downstrokes, such as completed in the Babylonian type. In figure 14 (modern) the upper right stroke of *alef* has become the main stroke's top part; *gimmel* resembles *nun* but the upper stroke of the letter tends to be vertical, and the corner of the *gimmel* is an acute angle; at the lower end, *zayin* bends with a little rightward slant. These features are not of recent origin: they gradually came into being after the period of figure 13.

### **TEMANIC TYPE**

The earliest available specimen of the Temanic cursive dates from the 12th century (figure 15) and later material of this type is also very scarce. Figure 15 contains no very specific cursive forms: *zayin* developed into the question mark type only some time between then and the 16th century: its usage has continued to the present day.

### **MAARAVIC TYPE**

The available cursive documents of the Maaravic type begin in the 11th century, and then, for a considerable time, continue to be scarce. In figure 16 (11th century) *alef* has the K-form; the right stroke of *mem* does not turn leftward at the bottom and the left stroke is as long as the right one, being practically on the same level. Figure 17 (15th century) presents the most unusual appearance among all the cursives, and its highly developed aesthetic character does not make for easy reading. This difficulty is increased by the fact that those letters which end in a leftward movement touch those which follow them, that when *bet* or *kaf* or, sometimes, *dalet* precede a *vav*, this is linked up with it and thereby dragged down from the line, the *he* in final position is linked with a preceding *resh* and placed below it, and the *yod* is placed inside a preceding *bet* or *kaf*. *Alef* has two forms, one that is initial and medial, the other final. In the latter the original main stroke is high and short, and the right stroke sits on its right end: the former is even more contracted: the two right strokes have been merged into one small vertical, while the left stroke slants down to the left. *He* is a kind of inverted S-wave; final *mem* is more or less an oval; *samekh* has a long tail; the right stroke of *zadi* and final *zadi* is generally above the line ceiling, and is joined to the tip of the main stroke; the top bar and right downstroke of *tav* have been fused into a curve, and the left stroke is joined to its bottom end. The modern hand of figure 18 is a very careful one. *Alef* has become a shallow S-wave starting above the line ceiling (the "full" form which is often used in this specimen seems to be an unusual attempt at special clearness); the top stroke of *dalet* is above the line ceiling; *he* is an inverted shallow S-wave of line height; *mem* tallies with the Ashkenazic form; *resh* is a tall letter—when followed by *he* or *yod* it is linked with them, the *yod* being reduced to a dot; *tav* is a long, straight, oblique line.

### **SEPHARDIC TYPE**

The available Sephardic material of fully developed cursive starts from the beginning of the 11th century. Figure 19 dates from the middle of the 11th century: *alef* has the K-form but in final—and, less often, in other positions—the two right strokes are high up, joined to the top of the left stroke; the *alef* part of the *alef-lamed* ligature is preserved in its angular form; the right part of *tet* is usually in the upper half of the line; the left stroke of *samekh* is generally not written with much care so that the letter is then identical with final *mem*, being of circular or oval outline. Figure 20 (15th century) illustrates a writing that forms a counterpart to the Maaravic hand of the same time (figure 17) but does not present the same extreme degree of parallelization. This kind of script is a book hand, but much plainer types are also used in books. Upon the introduction of the printing press it was not adopted as a type face and became very rare: it seems to have died out in the 18th century. The modern hand (figure 21) is not a continuation of it but of the plain sort, being clear and easily legible. *Alef* is a long letter, an S-wave beginning on top, at the right, with a narrow loop; *he* is a little inverted S-wave, mostly in horizontal position. The form of the *lamed* is identical with that of the present handwritten, but what appear to be the corresponding strokes are not really so. The main stroke of the Old Semitic form survives in the right stroke of the

Hebrew cursive but the Western cursive in the left one. *Resh* is very often a tall letter; *yod* following *alef*, *dalet*, *samekh*, or *resh* is attached to them as a dot; a *he* which follows *resh* is linked to it.

### **YEVANIC TYPE**

Figure 22, a dipinto from Magna Graecia (c. fourth century), shows the early cursive stage of the Yevanic type. Figure 23 (15th century), while resembling the Sephardic type in certain respects and Oriental types in others, is independent of either. The similarities are due to convergent developments, growing from the same original forms. The most characteristic letters are *alef*, *dalet*, *he*, *zayin*, *tav*; *he* and *tav* appear in double forms, one being more highly cursive than the other. A characteristic feature of this script is the rightward blob at the end of *dalet* and *zayin*.

### **ITALKIAN TYPE**

The earliest available examples of the Italkian type also come from Magna Graecia. Their script is the same as that of the early Yevanic, from which it developed. Figure 24 (11th century or somewhat earlier) is a more developed cursive, written with great care and used as a book hand. Little is left of these forms by the 13th century, and even less by the 16th: the writing of figure 25 is not particularly legible. The two downstrokes of *he* are linked but the left one remains in its position, thus the letter differs very much from those hitherto met with, where the left stroke had been dragged downward. The lower stroke of *lamed* has become a cross stroke—a feature unknown in the other cursives. *Samekh* as a plain circle is very rare in other types. The *pe* is another unique form: it looks like horizontal figure 8—the strokes increasingly curved until even the one on the left, originally a straight line, had become circular. In the centuries that followed there was some slight development. For instance, in *he* (figure 26) the left stroke and the link with the right stroke merged to form a dot; the result is that the letter is now virtually identical with modern Ashkenazic *pe*.

### **ZARPHATIC TYPE**

The Zarphatic writing of figure 27 (12th century) might appear at first glance to be related to the Italkian type. However, it is unmistakably of a different kind. Perhaps the similarity arises from their both having been written with the same sort of pen—a quill—while the other types from early centuries previously dealt with here, were produced by a reed pen. The forms in figure 27 are all in a properly developed cursive, although they do not differ greatly in their basic structure from the square letters. The most characteristic are the *alef*, *lamed*, *mem*, *final pe*, and *shin*. This document is written in a book hand. Figure 28 (14th century) is in a less careful hand of the same type.

### **ASHKENAZIC TYPE**

The early Ashkenazic cursive is practically identical with that of the Zarphatic. Figure 29 (13th century) is not as carefully written as figure 26. It is not a book hand. During the next three centuries considerable changes took place (figures 30 and 31): the downstrokes of *dalet* and *zayin* end in a curve which is open to the left; *tet* has become a tick; the middle part of *lamed* has vanished, the letter being almost a straight line; in *mem* the left stroke is parallel with the right one and is generally of equal length—they are connected by a bridge, which is mostly horizontal.

### **KARAITIC TYPE**

There are two extant specimens of Karaitic cursive. Figure 32 (16th–17th centuries) represents Yevano-Karaitic. The right strokes of *alef* are high up; *gimmel* resembles *nun* but its bottom stroke is straight and horizontal; the upper part of *tet* is in the upper half of the line; *lamed* has lost the middle stroke; the right stroke of *mem* is extremely short, the left stroke is very long, starting high above the line; final *mem* is circular; the same is true of *samekh* but it has a tail on the left; the inner stroke of *shin* is joined to the top of the left one, slanting down from above. The forms of Crimean Yevano-Karaitic (figure 33, 18th century) are more or less the same in structure as in figure 32 and yet the writing looks very dissimilar. There is a structural difference in the *dalet* and *zayin*, where the downstroke finally turns rightward.

**[Solomon Asher Birnbaum]**

## **SQUARE SCRIPT**

### **Sixth Century B.C.E. to Second Century C.E.**

The square script belongs to the Aramaic branch of Semitic writing. In the Babylonian-Assyrian and Persian empires the Aramaic language and its alphabet became the official language and script of the administration. They were also adopted by the Jews in Babylonia and elsewhere, and later penetrated Palestine. When the new script was officially adopted for the writing of Torah scrolls the change-over from the Paleo-Hebrew alphabet was complete although the old script was twice revived, centuries later, for legends on the coins under the Hasmoneans and under Bar Kokhba. The oldest dated document in the new script and language comes from Egypt (515 B.C.E.; figure 1). The script is highly stylized, with very thin downstrokes slanting to the left and very thick horizontals (or near-horizontals) dominating the picture. From this general Aramaic writing the Jews and the other peoples of the region—Palmyrene, Nabateans, etc.—in the course of the next few centuries developed types of their own. By the end of the fourth century B.C.E. the Jewish forms closely approached the full-fledged Jewish script (figure 2). Therefore it should properly be termed Jewish scripts rather than "Hebrew script," since it was used by Jews, not by Hebrews (nobody would apply the term Hebrews to the Jews of that period). In speaking of this writing the designation Hebrew script should therefore be dropped; it could then be employed to describe the alphabet of the Hebrews. This would, in addition, have the advantage of conforming to the usage in the ancient sources, where *ketav ivri* denotes the pre-Exilic script. So long as the name Hebrew script continues to be used for the Jewish script, the script of the Hebrews ought to be designated Paleo-Hebrew, the term introduced in *The Hebrew Scripts* (see bibliography). In the second half of the third century B.C.E. Hebrew writing was already on the threshold of the square script (figure 3). By the middle of the second century B.C.E. further development had noticeably taken place (figure 4) and during the first centuries B.C.E. and C.E. the final form had almost been reached (figure 5).

The evolution from the sixth century B.C.E. was considerable. Figure 6 illustrates this step by step, through the six stages of the final *mem*. The top of the first form is a cursive development of the original W-form (which has been preserved in the Roman M).

### **Appearance of the Letters**

For the second century C.E. it is already possible to speak of the square script proper (figure 7). By the seventh century (figure 8) almost every letter of the alphabet had either a top bar or a head, while many had a base as well. The invisible frame within which a letter was written was a rectangular oblong standing on one of its shorter sides. Only rarely was this frame a square. Hence the name square script is really a misnomer. At certain periods in certain regions the frame was not rectangular, the downstrokes being oblique while the top and bottom strokes remained horizontal (see, for instance, figures 24, 29, 34). After the first few centuries the evolution proceeded at a very slow pace. The changes did not involve the structure of the letters but the style of the writing. Perhaps by the seventh century (figure 8) there was a tendency for the horizontals to be thick, while the downstrokes were thinner, or thin. The first dated manuscript (from 896 C.E.) of the fully developed calligraphic kind (figure 9) was written in a style which has remained virtually unchanged ever since (figure 10). While the horizontals had originally played a very minor role compared with the uprights, the opposite extreme had now been reached. The near-polarization of horizontal and upright strokes had not resulted in a dull geometrical pattern: some oblique strokes were left outside the system, some strokes extended above or below the line—the strokes themselves were not geometrically straight but slightly curved, wavy, or tapering. The great weight of the horizontals created a clear impression of continuity along the line. Half the letters rested on their bases, and the other half partly stood and were partly carried by their neighbors, in the manner of a suspension bridge. But, although strongly linked together, they did not lose their individuality. The evolution of the forms from the sixth century B.C.E. is here illustrated by the letters *he* and *samekh* (figure 11). It can be seen that the change in the first five centuries (see lines 1–5) was much greater than during the last eight (see lines 6–7).

One detail in the development of the forms—the rise of the *litterae dilatibiles*—requires special mention, because it falls outside the category of structural evolution, and is of a purely aesthetic

nature. Certain letters, when they stood at the left end of a line but did not reach as far as the actual edge of the column, had their top bars extended to that edge so that the line might be of the same length as all the others. The effect was to make the left edge of the column neat and straight, and ensure that the general appearance of the page should be pleasing to the eye. This device—dilatation is the term introduced in *The Hebrew Scripts*—no doubt arose spontaneously and spread among the scribes because it combined the virtues of simplicity and effectiveness. These forms do not appear to antedate the sixth to seventh centuries C.E.

Although an increasing number of Jews lived outside Palestine after the Babylonian Exile, there must have been close contact between them and Palestinian Jewry. This is evidenced by the fact that for a long time no divergent development took place. But such a state of affairs could not continue beyond a point, as forms do not remain static forever and writing, like language, is subject to change. As the dispersion of the Jews increased, separate developments set in, and each distinct cultural branch which grew up had its own type of writing. In some cases differentiation was restricted within narrow limits but in others divergence went very far, even though the conscious aim of the scribes was to reproduce faithfully the traditional forms of the letters, especially in the copying of synagogue scrolls. Other than in scrolls, *tefillin*, and *mezuzot*, the square script was used in biblical, liturgical, and talmudical codices but hardly ever in any other books. Certain letter forms were reserved for the scroll script.

## Basic Types

The main groups or types of writing which came into being in the various Jewries are: Ashkenazic in Germany and in Ashkenazi settlements elsewhere, Babylonian, Egyptian, Italkian, Maaravic in the Maghreb, Palestinian-Syrian, Parsic in Persia and Parsi settlements, Sephardic in the Iberian Peninsula and Sephardi settlements, Temanic in the Yemen, Yevanic in the Balkans and Crimea, and Zarphtic in northern France. There were also some small groups, e.g., the scripts of the Jews in China or India. The Karaites developed three main types of their own (see below).

It is hardly ever possible to establish, with any measure of certainty, the genetic relation between the types, because the small amount of early material known was penned centuries after the group in question came into existence, and by then time had effaced any obvious clues. Sephardic appears to be an extension of Maaravic. Maaravic is presumably a continuation of the Palestinian-Babylonian-Egyptian complex. Parsic, though very individual, might be descended from Babylonian, and the same possibly holds good of the equally individual Temanic. There is, however, one exception where the relationship between two types is beyond doubt: the case of Ashkenazic and Zarphtic. Ashkenazic is definitely the continuation of Zarphtic.

## Egypt Types

Outside Palestine only the Egyptian branch provides pre-square material (see above, figures 1 and 2). The oldest datable Bible manuscript, written in Egypt in a calligraphic hand, is of about the fifth century C.E. (figure 12) Although earlier than figure 8, it is in a more regular, formal style. A nonbiblical manuscript dated three centuries later is written in an almost modern hand (figure 13).

The final stage of calligraphic development in Egypt was reached in the 10th and 11th centuries (figure 14), when horizontals were thick but not excessively so.

## Babylon Type

The forms in figure 15, a nonbiblical Babylonian manuscript of about the eighth century, are even less formal than those of the corresponding manuscript of the same time in Egypt but the forms in the biblical manuscript in figure 16 (written in 916 C.E.) are practically identical with those in the corresponding manuscript written in the Egyptian type; however, in figure 16 there is not much contrast between the thickness of the horizontals and verticals.

## Parsic Type

The Parsic type, i.e., the script of the Persian Jews and their descendants outside Persia, is presumably derived from the Babylonian one, although there is too little early comparative material available to arrive at a paleographical decision. The earliest available documents already show a highly individual development. By the 16th century (figure 17, of 1571) the forms were so

completely different from the Babylonian ones that the gulf must by then have been in existence for a very long time. The style was much less regular and formal, and there was an absence of monumentality. The horizontal strokes were very thick, the downstrokes thin. This contrast was already in evidence, though to a less marked degree, in the tenth century, when it is encountered in Palestine and Egypt—a striking example of how, in spite of geographical separation, new developments spread from group to group.

## **Temanic Type**

Yemen was the southernmost early seat of Jewish writing. The available material begins approximately with the 12th century (figure 18). The contrast in thickness between horizontals and downstrokes was by then in full force. The term for this type as used in *The Hebrew Scripts* is Temanic. Like the Parsic type it is not regular and formal, and thus contrasts sharply with the Palestinian-Syrian, Egyptian, and Babylonian types. However, Temanic does not otherwise resemble Parsic, as a comparison of a manuscript of 1468 (figure 19) with the Parsic one of 1571 (figure 17) will show.

## **Maaravic Type**

The northwestern shore of Africa—the Maghrib—was the home of the Maaravic type of the Jewish script, which had presumably followed the line of migration from Egypt westward, its forms being closely related to those of the Palestinian-Syrian/Egyptian/Babylonian complex. The general impression given by the script of the earliest available dated Maaravic Bible manuscript of 946 C.E. seems to point to a closer relationship with the Palestinian than with the Egyptian and Babylonian types. The contrast between thick and thin strokes is clear but not so great as in some of the above-mentioned types. In the non-biblical fragment of 978 C.E. (figure 21) the writing is slightly less formal. But Maaravic is connected not only with the east; there is also a close link with Europe, i.e., with the Sephardic type of the Iberian Peninsula.

## **Sephardic Type**

This type is practically identical with Maaravic. It is to be assumed that Sephardic was introduced from Africa. However, available material of both types, which is of rather late origin, provides no definite proof. An epitaph which is of an unusually earlier date (sixth century, figure 22), and contains some rather archaic forms, also provides no proof in this respect. The possibly oldest pen-written Sephardic manuscript available comes from the ninth-tenth century (figure 23). Here the contrast between thick horizontals and thin down strokes is great. The writing is considerably less formalized than that of the Palestinian-Syrian-Egyptian-Babylonian complex. That stage was reached, and surpassed, by the 12th century.

The biblical manuscript of 1207, illustrated in figure 24, shows forms which are harmonious and regular without being rigid. The next three centuries saw hardly any change at all, and, upon the introduction of the printing press, the typeface was designed on the basis of contemporary manuscript forms. Through a historical accident only this typeface has survived to the present day, while the two other early typefaces (see below) disappeared. In the course of the centuries it deteriorated very much aesthetically, as a comparison between figure 24 and printed books from various ages will show.

The Sephardic type was not restricted to the Iberian Peninsula. It spread to the north of it; it was also employed in Provence, Languedoc, and Comtat Venaissin. When contact with Spain ceased, upon the expulsion of the Jews in 1492, the script north of the Pyrenees and that of the exiled Sephardim started developing on divergent lines. In the new settlements, too, differentiation arose. The form used in the largest and most important of these—that in Turkey—is the main representative of the Sephardic type.

## **Yevanic Types**

With Sephardic the Jewish alphabet entered Europe from the southwest. But its southeastern entry was perhaps of even greater consequence. Hardly any material has survived from Greek-speaking Jewry in Asia Minor and Greece during the Hellenistic period. However, slightly more material, the oldest available documents of the Yevanic type in Europe, has survived from Magna

Graecia. These documents are also the earliest extant written in the Jewish script in Europe (see below, the section Cursive Script, figure 22). The oldest available example of the square style comes from Asia Minor (figure 25). It clearly belongs to the neighborhood of figure 5. No early biblical manuscript is available from this group but to judge by the conditions in other types the tenth-century fragment shown in figure 26 might indicate that there was a calligraphic biblical square style then in existence.

## Italkian Types

The next stage was in Italy. Is the Jewry of this country descended mainly from the Jews who lived there in antiquity, or is the main source perhaps the settlement in Magna Graecia? If the latter, the Italkian type would have its roots not in the Palestinian but in the Yevanic type. The documents (inscriptions) start about 300 C.E. (figure 27). The earliest square manuscript, a biblical one, is of 979 C.E., the oldest from Europe that is dated (figure 28). The contrast between thick and thin strokes is strong. The style of the writing is quite unlike that of the contemporary western oriental groups or that of Maaravic and Sephardic. Comparing the forms with those of figure 10, it would be most difficult, at first glance, to say exactly what makes them appear so different although the corresponding letters are constructed identically. In the 15th century the thick/thin feature was—perhaps under Ashkenazic influence—so pronounced that the script looked as if it consisted only of horizontals (figure 29, of 1466). When, not much later, the typeface was designed, this kind of writing was not chosen as a model (figure 30).

## Zarphatic Types

In central and northern France the Sephardic type that was encountered in southern France was not found, a result of the southern provinces coming only very late to the French Crown. It is therefore misleading to use, in this context, the word French, with its wide connotation. The traditional Hebrew name for the northern and central region, Zarefat, is the source of the term Zarphatic, introduced in *The Hebrew Scripts*. In the earliest manuscripts certain similarities with the Italkian type can be noted. Was there perhaps a genetic relation between the two, or do they represent separate, independent developments going back to Roman times? Current information is insufficient to answer the question, as no available Zarphatic manuscripts antedate the 12th century (figure 31). The difference between thick and thin strokes was strongly marked. Zarphatic did not long survive the expulsion of the Jews from France (1394) because the refugees were absorbed into the Jewries of their new homes. The Zarphatic type also included the script of medieval England, where the Zarphatim had settled in Norman times. It came to an end after only two centuries, when the Jews were expelled from England in 1290.

## Ashkenazic Types

The earliest specimens of the Ashkenazic type (Ashkenaz is the traditional Hebrew name for Germany) show identity of script with Zarphatic. It therefore may be concluded that the Ashkenazic group is descended from Zarphati Jewry—which confirms the existing tradition to that effect, and corroborates the evidence provided by the Romance element in the Yiddish language. Available Ashkenazic material dates from the first half of the 11th century, consisting of epitaphs, the first dated one being of 1034, while the earliest manuscripts can be ascribed to the 12th century; of these, the first dated manuscript in square script is from 1236. Ashkenazic is one of the three richest sources of codices, the others being Sephardic and Italkian. The early epitaphs showed well-proportioned, pleasing lettering (figure 32, of 1082). Here there was no difference between the thickness of horizontals and verticals, while the Bible manuscripts of even earlier dates in the other types already had that feature fully developed. The earliest dated Ashkenazic Bible manuscript had the thick/thin contrast (figure 33, of 1236). By the 15th century the domination of the horizontal strokes had reached its climax (figure 34, of 1432): the horizontals were longer, i.e., the letters were wider. In addition, the letters had a characteristic stance. In all groups and during all periods the downstrokes slanted somewhat to the right, so that the letters leaned slightly to the left. But now the slant had become considerably more pronounced (compare figure 34 with, for instance, figure 29, which was otherwise written in the same kind of script). Curves and undulating elements decreased, the forms became slightly rigid, though less so than in the printers' typeface (figure 35): When the typesetters transferred the handwritten

forms onto the metal, they regularized them geometrically. They also diminished the preponderance of the horizontal strokes. The thick horizontals began to be taken over for lapidary use in the 13th century; they became the rule toward its end. Detailed research might establish whether the development of the thick/thin feature was purely a matter of aesthetics, or whether there was a special reason, or a partial one, perhaps the transition from the reed pen to the quill.

## Karaite Types

Finally, there was the script of the Karaites. They had cut themselves off from rabbinical Judaism in early times but continued to use the Jewish script, as they considered themselves to be the real Jews. In their hands it underwent a distinctive development, which is not surprising as there is an intimate connection between religion and script throughout history and in all cultures. No single Karaite type existed; in various regions different Karaite types developed from the Rabbanite types. Material dated from the 11th century onward is available, but on the whole is sparse. There was a southern Karaite type in Egypt and Palestine, Yevano-Karaite in the Byzantine regions, Parso-Karaite in Persia.

From the above review of the square script it may be seen that there are many unsolved problems. An answer to some might be found by further research. For the fact is that the study of the Hebrew, i.e., the Jewish script, is, after all, still only at its beginnings. And the field is vast—stretching over more than two thousand years and many regions of the Old World.

**[Solomon Asher Birnbaum]**

## MASHAIT SCRIPT

Cursive was sometimes used as a book hand when, of course, more care was taken with the writing. But this did not involve an approximation to the square; it led to elaboration and ornamentality of a different kind, and thus to the shaping of a new style, the mashait script (incorrectly designated "rabbinic").

### The Palestine-Syria Type

This development took place independently in the various types and differed in degree from type to type. Evolution away from the cursive was greatest in the European types; in the Oriental ones there was little of it. A good example is in a specimen of the Palestine-Syria type (figure 1, 11th century). *Alef* has the pure K-structure; in *lamed* the horizontal stroke is omitted; *mem* has no base; final *nun* starts with a curve at the line bottom and is thus rather short; the inner stroke of *shin* tends to be slightly curved and joins the upper part of the left stroke. The forms in figure 2 (15th century) show very little change in detail but the general impression is one of a regular, pleasing hand. *Alef* has the square construction; *zayin* is a wavy line of the question mark type; the *alef* part of the *alef-lamed* ligature is a flattish parabola; final *nun* is a shallow S-wave, starting from the line ceiling; the inner stroke of *shin* is a little curve in horizontal position, joined to the top of the left stroke.

### Egypt Type

This type, like Palestine-Syria, is the basic kind of mashait (figure 3, 13th century). The two right strokes of the K-form of *alef* are joined high up to the top of the left stroke; the left stroke of *tet* is of double height but does not extend below the line bottom; *lamed* has the two-stroke form; *mem* has no base; final *nun* starts slightly below the line ceiling; *samekh* is a circle; the middle stroke of *shin* is a horizontal curve joined to the top of the left stroke. Figure 4 (1326) shows a somewhat more formal hand. The two right strokes of *alef* are high up but, in contrast with that in figure 3, the letter is based on the square construction, except that the right stroke joins the outer end of the middle stroke; generally the left stroke does not extend beyond the line ceiling; the *alef* part of the *alef-lamed* ligature is a shallow oblique S-wave, or even a straight line; the left stroke of *samekh* is short and only starts at the line bottom so that the letter is open on the left.

### Babylonia Type

Figure 5, a Babylonian specimen (tenth century), also represents the basic kind. The *alef* part of the *alef-lamed* ligature is the unchanged right-hand part of *alef*; *mem* has a short base which is often curved; the inner stroke of *shin* is joined to the middle of the left stroke. The modern hand is shown in figure 6. The right stroke of *alef* is above the line ceiling, joining the top of the left one—it often looks as if it were its top part; the original middle stroke is strongly curved and situated in the upper half of the line height; *gimmel* has the form of what, in most types, is a *nun*; *he* has the question mark shape; *lamed* has the two-stroke form; the right stroke of *mem* has shrunk to a tiny stroke at the line ceiling—it is now nothing but the beginning of the inner stroke, changing it into a shallow S-wave; the left stroke has become long, filling the whole line height, without, however, extending above the line ceiling; final *mem* is a circle; *zadi* is a tall S-wave; the inner stroke of *shin* has become a dot at the top of the left one; the left downstroke of *tav* is severed from the top stroke, beginning at the line bottom and running rather far down.

## Parsic Type

Although the individual letter forms of the Parsic type (figure 7, 14th century) present nothing unusual, the general picture is very distinctive. The main reason is the thickness of the horizontal strokes, which has the effect of reducing the distance between the top bar and base to a very narrow gap. *Alef* looks like a Roman N with the two right strokes half up the line height; *zayin* is a flattened Roman Z—it has thus almost returned to the Old Semitic form; the middle stroke of *lamed* has become the top part of the curve which is the lower half of the letter; *mem* has no base; the inner stroke of *shin* is a small curve in horizontal position. The top stroke of *gimmel* in figure 8 (18th century) slants down rightward, and is continued on the line bottom by a horizontal piece, which then slants down leftward below the line bottom. The *zayin* of figure 8 (18th century) has become unsymmetrical: the top stroke is much smaller than the bottom stroke, and sometimes disappears altogether; *mem* has no base; the inner stroke of *shin* has become a small curve, joined to the top of the left one. The modern forms (figure 9) do not differ from those of figure 8, or, for that matter, from modern cursive. The form of the *alef* here is an extremely rare one; what distinguishes *gimmel* from *nun* is that it is an acute angle, whereas *nun* has a rounded corner; the downstroke of *dalet* ends by turning right; *zayin* is of the question mark type; final *mem* is circular but the stroke often ends outside the letter with an upward movement; *samekh* is written in the same way, but when the top is reached a downstroke is added. In the somewhat cursive writing of figures 8 and 9, the thickness of the horizontals is less pronounced. The tall forms of *dalet* and *resh* are very rare, and have obviously been adopted from outside—they were used in the neighboring Babylonian type at least from the late 15th century.

## Temanic Type

This type shares with Parsic the thick horizontals and the consequent narrowing down of the space between the top bar and the base (figure 10, 13th century). The main stroke of *alef* has become horizontal, resting on the line ceiling; the *alef* part of the *alef-lamed* ligature is, on the whole, rather angular, as in *alef*; *zayin* is a small—sometimes very small—downstroke, crossed by a short horizontal; *tet* is like the Ashkenazic cursive form but preserves the inner stroke; the middle stroke of *lamed* is straight and horizontal; the right stroke of *mem* very occasionally ends in a short base; final *mem* differs from *samekh* in not having a downstroke on the left; *samekh* is generally less wide, and the downstroke has sometimes become a mere tail, resulting in an open letter. All downstrokes slant rightward. Three centuries later (figure 11, 15th century) the style is rather different, although very little change has taken place in the forms themselves. The horizontals are much less thick. The middle stroke of *alef* begins by being straight and horizontal, and then curves downward but does not reach the line bottom; the *alef* part of the *alef-lamed* ligature generally corresponds to the form in figure 10, but two other types are occasionally to be met with—one is identical with the right part of the square form, and the other is a shallow S-curve, running from the top right to the bottom left; the top of *zayin* is a tick, and the end of the downstroke turns rightward. The general style of figure 11 continues unchanged for two more centuries (figure 12, 17th century). The lower right stroke of *alef* now reaches the line bottom, unless prevented by the preceding letter; the *alef* part of the *alef-lamed* ligature corresponds to the square form; *zayin* is unchanged.

## Maaravic Type

The forms of the Maaravic type (figure 13, 14th century) are cursive but written with care and regularity. The same applies to the specimen from the next century (figure 14). Here the parallelism of the downstrokes is developed to an extreme degree. Its impact is intensified by the high and narrow look of the letters, arising from the shortness of the horizontals. The right part of *alef* is high up and very small; *gimmel* is a right angle; final *mem* is an oval in the upper half of the line; *samekh* is triangular. The style of extreme parallelism seems to have been characteristic of one particular region and period, and is not met with again subsequently (see, for instance, figure 15, 18th century). An interesting detail in this specimen is that the *alef* of the big display script used for two initial words, is written in cursive, while the text itself is in mashait.

## Sephardic Type

This type (figure 16, 11th century) corresponds to the cursive of the same period (figure 19. Cursive Script). It is clearly well advanced toward a fully developed mashait, although, in many letters—e.g. in *he*, *mem*, *shin*—formality is achieved by features from the square. *Alef* is of the K-type; the middle stroke of *lamed* is fused with the downstroke to form a semi-circle in vertical position; final *mem* is more or less round; *samekh* is quadrangular; *shin* consists of a base and three parallel downstrokes, the inner one of which often does not reach the base. In the 15th century Sephardic mashait (figure 17) reached its climax, being a beautiful book of a high order. Legibility, however, is not good, the letters are narrow and very close to each other, and any downstrokes that end leftward touch the next letter. When the right downstroke of a letter does not turn leftward at the line bottom, it stops midway down the line height. Starting from the tip of the left stroke the lower right stroke of *alef* begins horizontally on the line ceiling and ends by curving down to the middle of the line height; the right top stroke is very thin and short, above the line ceiling; final *mem* consists of two more or less rounded halves, top right and left bottom; the bar of final *pe* has a little stroke at its left end, which represents the original top of the left stroke; the right stroke of *zadi* and final *zadi* is an extremely short horizontal which joins the top of the left stroke; the same applies to the inner stroke of *shin*. Transferred to the typeface of the printing press, this script, like the square, lost much of its beauty (figure 18, 18th century). Although only a shadow of its former self, it is still a pleasing hand. The usual, but incorrect, designation for it is "Rashi script," obviously because Rashi's commentaries on the Bible and Talmud—the books which everybody was constantly handling from boyhood to old age—were printed in (Sephardic) mashait. Rashi himself, naturally, wrote in Zarphatic (see below).

## Provençal Sephardic Type

For a long time this type did not differ from the Iberian type. Figure 19 (13th century) is a very plain hand. *Alef*, more often than not, has the cursive form. Figure 20 (15th century) is a beautiful hand. Figure 21 (18th century) is far inferior, but its mashait character is more pronounced than in the Sephardic type of figure 18.

## Yevanic Type

The 13th century Yevanic mashait is a very plain hand (figure 22). *Alef* consists of a lower main part and an upper one, the lower combines the lower halves of the former left stroke with the former main stroke, resulting in a circumflex; the former right stroke and the upper part of the former left stroke remain separate; the downstroke, both of *dalef* and *he*, finally turns rightward;. Figure 23 (15th century) is a more formal script but much less elaborate than contemporaneous Sephardic. In contrast with the latter, the horizontals play a very big role. *Dalef* and *zayin* have the same characteristics as in figure 22; the inner stroke of *shin* is short and joined to the middle of the left one.

## Italkian Type

The first specimen of Italkian mashait (figure 24, c. 11th century) shows a very regular and pleasing hand, which, however, is not yet calligraphically developed. The left downstroke of *he* still issues from the top bar; *shin* is practically triangular, and the middle stroke is short and does not reach the line bottom; the frequent expression "he said" is always rendered by an abbreviation; the left stroke of *alef* and the left top stroke of the *mem* are omitted. In the 14th

century a highly calligraphic style was reached. The horizontals dominate the picture in the way they do in the square, and a number of letters have the same structure, although their appearance is very different indeed—cf., for instance, the *mems* or *nuns* of the two styles occurring in the specimen (figure 25). There are practically no straight strokes; everything is curved. About a century later (figure 26) the difference between the thick horizontals and thin downstrokes is even greater. The latter have become thinner, longer, and straighter, and all the letters have a strong leftward slant. The downstrokes of the long letters are shallow S-curves, rather thick in the middle. Figure 27 shows the contemporaneous typeface. The designer evidently wished to avoid extremes.

## Zarphatic Type

The Zarphatic forms of 12th-century mashait (figure 28) are clearly distinct from those of the contemporaneous cursive: not only are they very carefully written but they differ in many details. The right part of *alef* is at the line ceiling; the top part of *kof* is a horizontal line—only the merest trace of the downstroke is left. The fully developed calligraphic hand begins in the 13th century. Most downstrokes are shallow S-waves, thickened in the middle (figure 29, 14th century). Neither horizontals nor verticals dominate the picture. The distance between the letters is reduced to a minimum; very often they actually touch. *Shin* has a wide horizontal base. By the 15th century, only traces of this calligraphic style (figure 30) survived.

## Ashkenazic Type

The differences between the 13th-century Ashkenazic mashair of figure 31 and the almost contemporaneous Zarphatic of figure 28 appear to be due only to the individualities of the scribes. Further research is needed to establish when the divergence between the two types became pronounced. It seems that the full development of the calligraphic style was reached in Ashkenazic very slightly later than in Zarphatic and that, like there, it was soon simplified (figure 32), surviving only as a display script (figure 32, top and bottom). The plain style is the basis of the typeface (figure 33).

## Southern Karaitic Type

The 16th-century Southern Karaitic type of figure 34 is pleasant to the eye. There is not much difference between the thick and the thin strokes. The opposite may be said of the Yevano-Karaitic specimen (figure 35, 16th century).

**[Solomon Asher Birnbaum]**

## LETTERS USED AS NUMBERS

Although in some early Hebrew inscriptions (such as the Samaritan ostraca) there appear certain symbols which may be taken as numerals, in general letters of the alphabet were used as numerical signs. This usage is not biblical. It may have been an imitation of the Greek custom; the first traces of it are found on Hasmonean coins (c. 135 B.C.E.) The letters from *alef* to *tet* stand for the units in succession; *yod* to *zadi* for the tens, and *kof* to *tav* for hundreds (that is, up to 400). In the Talmud the numbers above 400 are formed by compositions (500 = 400 + 100 (c"t); 900 = 400 + 400 + 100 (c"tt), and so on; in later times the final forms of the letters *kaf* K, *mem* M, *nun* N, *pe* P and *zadi* X were not infrequently used for 500, 600, 700, 800, 900). The thousands are represented by the same letters as the units, but are generally followed by a kind of apostrophe (or two dots are placed above them: 5727 = z"kST'h). Numbers above ten are expressed by a combination of letters, those denoting the higher numbers being placed toward the right (e.g., 182 = b"pc). In an indication of the date of the year, the letter representing the thousands is generally omitted (5727 = z"kST). The numbers 15 and 16 are not denoted by the letter h"y and v"y (since these combinations represent the abbreviated form of the Tetragrammaton): instead, the combinations v"t ("nine and six") and z"t ("nine and seven") are used. (See Table: Hebrew Letters.)

**[David Diringer]**

## **BRILLE**

This system enables the blind to read and write Hebrew with speed and relative facility. Until the 1930s, each school engaged in educating the blind and in printing Hebrew works in Braille developed its own system of Braille signs. There was no standard system of pointing Hebrew letters and a pupil graduating from a given Jewish school for the blind was unable to read the literature published by another. In 1936, an agreement was concluded among all the institutions engaged in the publication of the Bible, the translation and copying of books into Hebrew, and the writing and editing of material in Hebrew Braille. The agreement called for a uniform method of Hebrew Braille pointing to be adopted by all educational institutions concerned with the needs of blind children, as well as by the cultural centers providing Braille literature in Hebrew for the blind all over the world.

The problem and lack of uniformity in Braille writing existed in all languages and in schools for the blind all over the world. As a result of a UNESCO agreement in 1950, on the occasion of the international meeting on Braille uniformity, and upon the recommendation of the International Hebrew Braille Committee 1936–44, it was decided to adopt a uniform Hebrew alphabet in all countries and languages. According to this system, there are signs for the following characters.

- (1) All the Hebrew letters (with the exception of the end forms).
- (2) Punctuation signs.
- (3) Mathematical signs (numbers and notation).
- (4) All the Hebrew vocalization signs (the signs always follow the letter to which they belong).
- (5) Signs for chemistry and physics.
- (6) Signs for musical notes.

Errors can be erased by straightening the embossed dots with the aid of a special implement or by passing six consecutive dots over the error. There are four institutions in the world engaged in the printing and publication of the Bible and books in Hebrew Braille:

- (1) the Jewish Braille Institute of America, New York;
- (2) the Israel Ministry of Education and Culture, Department of Special Education;
- (3) the Central Library for the Blind, Netanyah, Israel; and
- (4) the Jewish Institute for the Blind, Jerusalem.

**[Zvi Hermann Federbush]**

## **MANUAL (DEAF)**

In Europe and America finger spelling as a means of communication between the deaf has been accepted for decades. Latin finger spelling is not identical for all languages which use the Latin alphabet. In all systems of Latin finger spelling one principle determines the position of the fingers: the similarity of the position to the shape of the written letter. This principle aids in learning and memorizing finger spelling. This is also the reason that the finger spelling of many letters is identical in the systems used for the different languages written in the Latin alphabet. The need for finger spelling depends directly on the cultural needs of the deaf in his society. Hebrew finger spelling probably was not developed sooner because the intellectual level of the deaf in Israel, now average, was low 35 years ago. During the second decade of the existence of the State of Israel, educational and instructional activities for children and adults in the community of the deaf were greatly expanded. Even though only a small percentage of the members of the Association of the Deaf and Mute in Israel draws its information from reading, this group continues to grow. They express a readiness to learn writing and finger spelling in the clubs for the deaf which exist in several centers in the country. This is especially true of Helen Keller House in Tel Aviv, the national center for the deaf.

## **Hebrew Finger Spelling**

In 1968 a system of Hebrew finger spelling was published by Jonathan Shunary, a teacher of the deaf. The system was developed according to the following principles.

- (1) Thirteen of the 22 letters in the Hebrew alphabet are expressed by accepted positions for the Latin alphabet as established by the World Federation of the Deaf (the International Manual Alphabet). However, almost all of the positions adapted for Hebrew finger spelling represent sounds different from those used in the International Manual Alphabet. This was done to keep to the principle of making the position of the hand as similar as possible to the intended letter. This was important to make it easier to learn the system and to spread its use quickly among the deaf in Israel. The letters *y*, *l*, *m*, and *n*, are expressed as in the International Alphabet, since it is possible to associate these to the Hebrew letters. The letter *a* was given the numerical value of one, and the letter *b* the numerical value of two. For several letters the position suggests a word beginning with that letter: (Heb. *cbV*, *devek*, "glue"; Heb. *Myynrc* *karnayim*, "horns), or symbolizes the position of the mouth during the articulation of the letter: for *h* the mouth is opened wide so the sign is a scratching palm, *s* is pronounced with a strong burst of air and so the fist is closed.
- (2) Three letters representing consonants not used in the Hebrew language are included in the Hebrew system. This is necessary for foreign names, place names, names of people active in international politics, science, sport, cinema, etc. The sign for & (pronounced like the *g* in English "gin,") is a reversed *g* with the fingers pointing down; the sign for *9* (pronounced like the *j* in the French word "*jour*," or *s* in the English word "leisure") is a reversed *z*; and that for *c* (pronounced like the *ch* in the word "church") is a reversed *c*.
- (3) The system makes it possible to represent vowels which are not written in Hebrew as letters.
  - (a) Every consonant followed by an *a* vowel can be expressed by moving the palm being used to the right.
  - (b) *e* vowels are expressed by moving the palm being used downward.
  - (c) *i* vowels are expressed by a slight twist of the palm being used. The letter *vav* thus serves to indicate two vowels, *o* and *u*, just as it does in written Hebrew.
  - (d) *o* vowels are expressed by pointing the thumb up.
  - (e) the *u* vowel is expressed by pointing the thumb to the left and moving it in that direction.

Just as many signs are expressed while simultaneously employing the mouth or without sound, so there are those who use a combination of finger spelling and this type of speech. In this case the lips are used to express the vowels and the finger spelling is made simpler.

### **[Jonathan Shunary]**

## **SHORTHAND**

The first attempts at evolving shorthand were made in the 19th century. In 1866, for example, Max Gondos adapted the Gebelsberger German method to Hebrew. Other attempts were made by Wilhelm Lerfler, Dr. Hedrich, and L. Kutz. In 1918 Lenis tried to evolve a system of Hebrew shorthand. The reason for the late appearance of Hebrew shorthand lies in the fact that Hebrew was not utilized as a living language until the 1880s. The need became pressing after World War I when Hebrew was recognized as one of the official languages of Palestine and began to be used in courts of law and for administrative purposes. Although it was widely believed that there was no need for Hebrew shorthand, since the Hebrew spelling omits a considerable number of vowels, this view proved unfounded and it was discovered that ordinary writing could not keep up with the speed of speech. Methods were invented after World War I by

- (1) Ben Yisrael Zulman (1919);
- (2) D. Tames (1921);

- (3) Mrs. P. Shargorodska (1926); and
- (4) J. Maimon (1929).

Of all these methods, Maimon's proved the most successful and popular among Hebrew shorthand writers. He began to evolve his method in 1924, basing it on the international shorthand system invented by General Felix von Konovsky, However, he also took into consideration the sounds and grammatical problems peculiar to the Hebrew language. He accordingly introduced amendments into the shortening of syllables and vowels and also invented special ideographs for Hebrew words.

After working for several years on improvements, he published his first textbook of Hebrew shorthand in 1929; in 1932 he produced a guide called *Elef Kizzurei Millim* ("One Thousand Ideographs"). Maimon decided that Hebrew shorthand must be liberated from the traditions of the normal Hebrew lettering and be independent of it. He therefore established that Hebrew shorthand should be written from left to right, unlike the square Hebrew lettering, since this movement is easier for the right hand, as in Latin characters, and that Hebrew shorthand should also represent the vowels, as in Latin characters, and not omit them, as in previous methods. He explained that in Hebrew, vowels often serve as important aids to recognition of a word, and that if the vowel of the first syllable is represented it would be possible, in many cases, to shorten the word without reducing the possibility of deciphering it. Furthermore, according to his method (and in accordance with international practice) the vowel signs in shorthand can serve as links between the consonant signs. Other systems have also been propounded: e.g., by H. Bar-Kama and H. and R. Shtadlan, who trained a considerable number of students and won a certain amount of popularity among Hebrew shorthand writers.

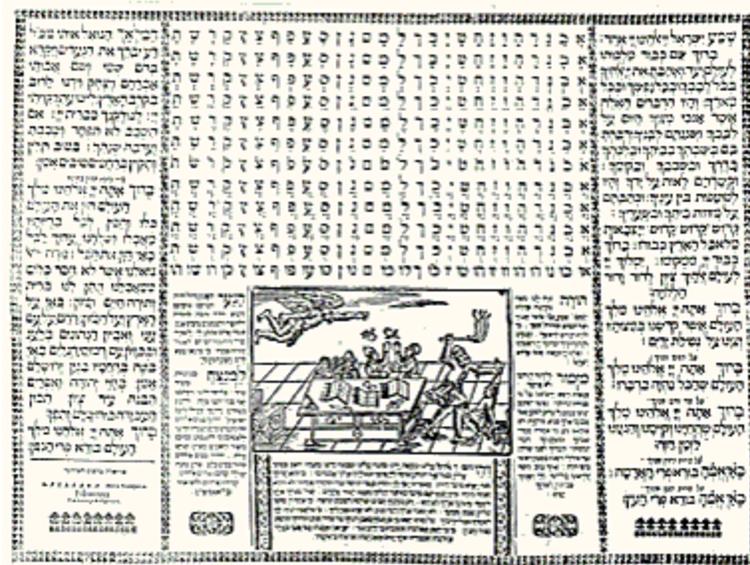
**[Jacob Maimon]**

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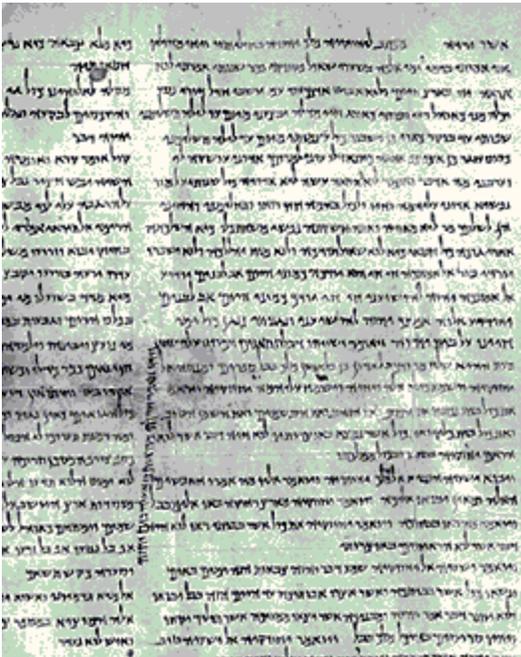
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Classroom wall chart, Ferrara, Italy, 1590. It includes the Hebrew alphabet, blessings, prayers, and psalms, and an engraving showing an angel rewarding good pupils and a teacher flogging a bad one  
Credit: Courtesy of Cecil Roth Collection



Girl learning the Hebrew alphabet in London  
Credit: Beth Hatefutsoth Photo Archive



The First Isaiah Scroll from Qumran  
Credit: Israel Museum Jerusalem, Shrine of the Book



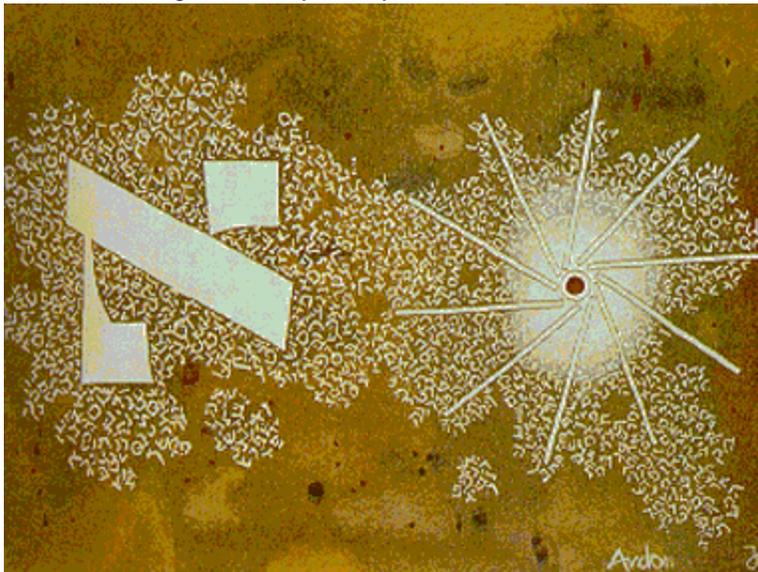
Page from a Hebrew *alef bet* (ABC) book from Egypt, tenth century C.E.  
Credit: Cambridge University Library, T-S KS.13



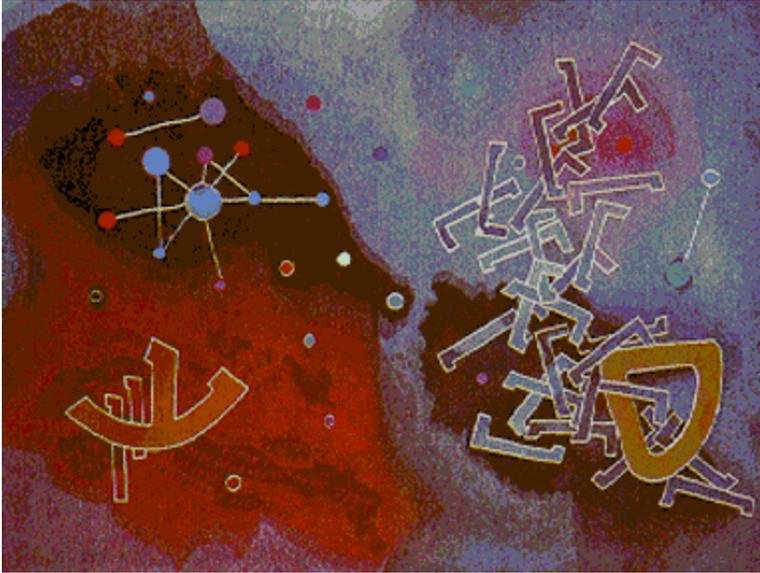
Fragment of the Damascus Document manuscript discovered by S. Schechter in the Cairo *Genizah* collection and published by him in 1910 as *Fragments of a Zadokite Work*. Fragments of the work were also discovered among the Dead Sea scrolls.  
Credit: Cambridge University Library, T-S 10K6



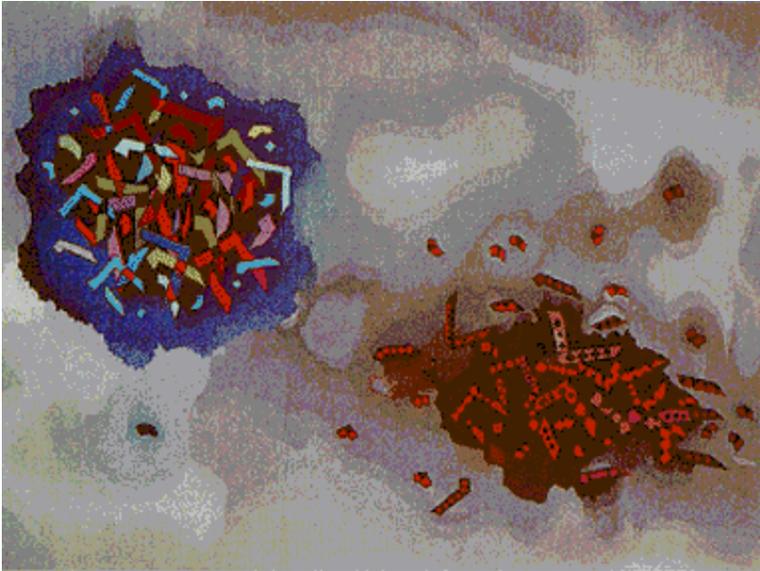
A page from an 11th-century copy of a commentary by R. Hai Gaon made by Abiathar ben Elijah ha-Cohen, the last Palestine Gaon  
Credit: Cambridge University Library, T-S NS J17



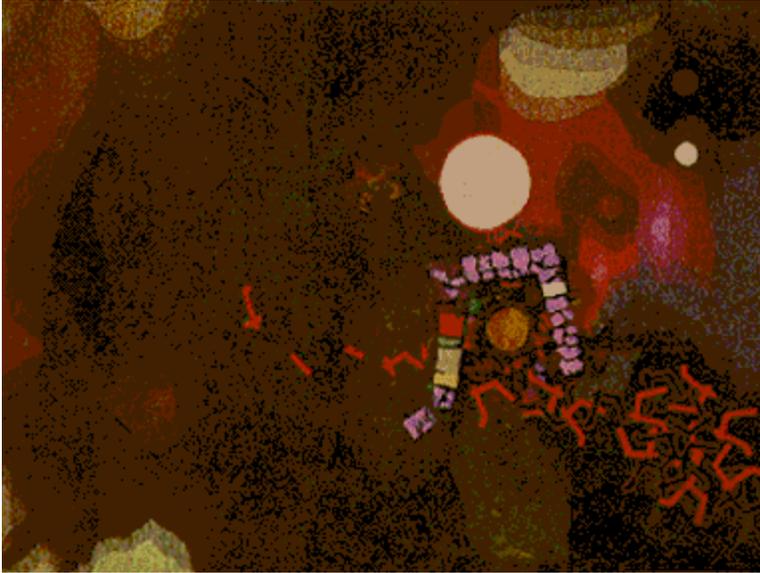
*Alef*, tapestry by Mordecai Ardon, for the Shaare Tzedek Medical Center, Jerusalem, inspired by a passage in the *Zohar*. The artist integrates paintings, calligraphy and words  
Credit: Courtesy of Shaare Zedek Medical Center, Jerusalem



*Nun-Samekh-Ayin*, tapestry by Mordecai Ardon, for the Shaare Tzedek Medical Center, Jerusalem, inspired by a passage in the *Zohar*. The artist integrates paintings, calligraphy and words  
Credit: Courtesy of Shaare Zedek Medical Center, Jerusalem



*He-Vav*, tapestry by Mordecai Ardon, for the Shaare Tzedek Medical Center, Jerusalem, inspired by a passage in the *Zohar*. The artist integrates paintings, calligraphy and words  
Credit: Courtesy of Shaare Zedek Medical Center, Jerusalem



Tav, tapestry by Mordecai Ardon, for the Shaare Tzedek Medical Center, Jerusalem, inspired by a passage in the *Zohar*. The artist integrates paintings, calligraphy and words  
 Credit: Courtesy of Shaare Zedek Medical Center, Jerusalem



Genizah manuscript fragment, a section of the *piyyut Kiddush Yerahim* by R. Phinehas ben R. Jacob Hacohein of Kafra, 11th century  
 Credit: Cambridge University Library, T-S NS 275.184

Dead Sea scroll



Column from the Temple Scroll, one of the Dead Sea scrolls  
Credit: Israel Museum, Jerusalem