Scribal Education in Ancient Israel:
The Old Hebrew Epigraphic Evidence

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There has been substantial discussion about the presence of "schools" in Iron Age Israel (that is, Israel and Judah), with some scholars affirming that there were schools and some positing that there is no cogent evidence for them. Within this article, the Iron Age Old Hebrew epigraphic evidence is analyzed. Based on the nature of the palaeographic evidence, the orthographic evidence, and the use of hieratic numerals, it is here argued that formal, standardized scribal education was a component of ancient Israelite society during Iron II. Of course, some have posited that becoming proficient in the Old Hebrew writing system was so facile that there was no need for formal, standardized education. However, modern empirical studies of the length of time required for proficiency in a first *alphabetic writing demonstrate that the field has been too sanguine about the pace of learning the Old Hebrew writing system.*

INTRODUCTION TO THE PROBLEM

The evidence for "schools" in ancient Israel (i.e., Iron Age Israel and Judah) has been analyzed by numerous specialists, but with no consensus achieved. Some scholars have affirmed that schools were present in ancient Israel (e.g., Dürr 1932; Hermisson 1968; Lemaire 1981; Puech 1988; Lang 1979; Heaton 1994; G. I. Davies 1995). Nevertheless, others have concluded that the data (biblical, epigraphic, and comparative ancient Near Eastern) supporting the existence of schools are inconclusive at best. For example, regarding the fact that there is no reference to "schools" in the Hebrew Bible, Golka has stated that "the best explanation for the fact that no schools are mentioned is still that there were none!" (Golka 1993: 11). After discussing the epigraphic and biblical evidence, Weeks affirmed that "there is neither any strong evidence for schools nor any convincing reason to suppose that they would have existed" (Weeks 1994: 156). Jamieson-Drake theorizes that "schools would be located in Jerusalem, if schools even existed" (Jamieson-Drake 1991: 156). Whybray conceded that there may have been some sort of modest scribal education, but he also asserted that it was confined to a small number of "scribal families" and that these were sufficient for "transact[ing] the business, both public and private, of the entire nation" (Whybray 1974: 38; cf. 1990: 69–71). Of course, the Hebrew root *lmd* has often been prominent in such discussions (Braulik 1993). Significantly, Lemaire has made a sustained argument for pervasive education in ancient Israel, based on epigraphic and biblical evidence (Lemaire 1981), but scholars such as Haran, Weeks, and Crenshaw have critiqued Lemaire's proposal and demonstrated in a convincing manner that Lemaire's broad conclusions are often based on tenuous interpretations of the evidence (Haran 1988; Crenshaw 1985: 605–7; 1998: 100–8; Weeks 1994: 132–56; cf. also Puech 1988). At this juncture, the field continues to be at an impasse.[1]

Within this article, the focus is on the following Old Hebrew evidence: (1) palaeography; (2) orthography; and (3) hieratic numerals. In addition, there is also some reference to the nature and function of

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[1] To be sure, Ben Sira's "*bêt midraš*" (Sir 51:23 Manuscript B) is normally understood to be a reference to a "school," but this Jewish work derives from the second century B.C.E. For discussion and bibliography of the "scribe" and "school" in Ben Sira, see Rollston (2001).

abecedaries and the formulaic nature of the epistolary epigraphs. Some attention as well is given to the rapid pace at which some scholars have assumed that an ancient alphabetic writing system could be learned. Ultimately, it is argued that the Old Hebrew epigraphic record reflects depth, sophistication, and consistency in the production of written materials and that the Old Hebrew data are most consistent with the presence of a mechanism for the formal, standardized education of scribal elites in ancient Israel.

SUPPOSITIONS ABOUT
THE PACE OF LEARNING:
THE OLD HEBREW WRITING SYSTEM

The writing systems developed and employed in ancient Mesopotamia and Egypt were complex nonalphabetic systems, with large inventories of signs. Scholars have argued that for even the most assiduous students, developing substantial facility in these writing systems required years of arduous training.[2] Conversely, it has normally been argued that mastering linear alphabetic Northwest Semitic was easily accomplished, requiring just days or weeks of training. Regarding the Old Hebrew alphabet, for example, Albright stated that "since the forms of the letters are very simple, the 22-letter alphabet could be learned in a day or two by a bright student and in a week or two by the dullest." He proceeded to affirm that he did "not doubt for a moment that there were many urchins in various parts of Palestine who could read and write as early as the time of the Judges" (Albright 1960: 123). Jamieson-Drake has opined that the Old Hebrew alphabet was "simple enough that functional knowledge of it could be passed on from one person to another in a comparatively short time" and that "schools would hardly have been necessary"

(Jamieson-Drake 1991: 154, 156). Weeks states that "the Phoenician alphabet adopted and then adapted in Israel is neither complicated nor arcane, and it is not necessary to suppose that lengthy schooling and a course in reading literature was necessary for a good grasp of the essentials" (Weeks 1994: 151). More recently, but with characteristic caution, Crenshaw has stated that "as for training to read and write Hebrew, its simplicity would have enabled students to acquire the necessary skills in a short time" (Crenshaw 1998: 107).

I would argue that assumptions about the simplicity of the Old Hebrew writing system and the rapidity of the pace at which proficiency could have been achieved are much too sanguine. Note that rather than positing rapid proficiency in alphabetic writing, recent empirical studies for modern languages have delineated developmental phases ("stages") in the process of word-reading and word-spelling (Henderson 1985; Ehri 1997; Seymour 1997; Ehri 1998; Richgels 2002; Beech 2005).[3] Furthermore, it has been argued on the basis of these empirical studies that for children to become proficient in a modern writing system (i.e., their first writing system), a few years are normally required, not a few days or weeks (Henderson 1985; Ehri 2002). Of course, it is readily apparent that emergent writing ("bare bones literacy") is often attested within "initial" periods of instruction, but proficiency (e.g., capacity to produce "documents" with minimal orthographic errors, and with the letters reflecting accurate morphology and stance as well as standard relative size) requires substantial time.[4] Naturally, some alphabetic writing

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[2]I would concur that mastering an alphabetic writing system is not as difficult as mastering Mesopotamian cuneiform or Egyptian hieroglyphics, but to suggest that it is facile to become proficient in one's *first* alphabetic writing system is not tenable. For discussion and bibliography on "schools" in ancient Egypt, see especially Brunner (1957), Janssen and Janssen (1990), and McDowell (1999). For Mesopotamia, see especially Vanstiphout (1979), Tinney (1999), Veldhuis (2003), and George (2005). Certainly the consensus of research is that learning the writing systems for hieroglyphs and cuneiform were arduous ventures for the ancients. Also of import, though, are some recent studies that have actually argued that there are numerous variables, and so "attempts to describe writing systems along a simple continuum of difficulty are inadequate" (Lee, Uttal, and Chen 1995).

[3]Ehri summarizes these stages in broad terms as follows: (1) prealphabetic; (2) partial alphabetic; (3) full alphabetic; and (4) consolidated alphabetic. The first stage applies to "prereaders who operate with nonalphabetic information because they know little about the alphabetic system." The second stage applies to "novice beginners who operate with rudimentary knowledge of some letter-sound relations." The third level applies to students who "possess more complete knowledge involving grapheme-phoneme units and how these units form words." The fourth level "applies to more advanced students who have knowledge of letter patterns as well as grapheme-phoneme units" (Ehri 1997: 240, 253–56).

[4]Reading and writing are cognate, but different, skills. Note that writing requires not only the ability to recognize letters, but also the capacity to produce them. In addition, it requires the capacity to spell words in the conventional manner (e.g., without morphological metathesis and with the correct consonants and vowels in the conventional lexical positions). In essence, although there is a strong correlational structure between spelling and reading, there is also a general asymmetry between them (cf. Bosman and Orden 1997; Ehri 1997).

systems are more difficult to master. For example, modern languages with a deep orthography (e.g., English, Danish) arguably require more time for the achievement of proficiency than languages with a shallow(er) orthography (e.g., Greek, Finnish, Italian).[5] However, the fact remains that, regardless of the orthography, any suggestion that proficiency in one's *first* alphabetic writing system (ancient or modern) can be achieved in a few days or weeks must be considered most problematic.[6]

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[5]The terms *deep orthography* and *shallow orthography* are technical terms used in the descriptions of alphabetic systems (Seymour 2005; Gough, Juel, and Griffith 1992). A deep orthography is one in which there is not a "simple correspondence" between letters and sounds, and complexities and irregularities are quite common. Along these lines, Ehri has stated that "according to our theory, graphemes that do not follow the conventional system in symbolizing phonemes should be harder to store in representations than graphemes conforming to the system. Also, phonemes having many graphemic options should be a bigger burden on memory than phonemes having only a couple of options. In addition, graphemes that have no correlates in sound, for example, doubled letters and silent letters, should elude memory. Likewise, spelling patterns that recur in few other words and are not built out of conventional graphemes and phonemes should cause problems" (Ehri 1997: 248; cf. also Treiman 1993). Because German orthography is a shallow(er) orthography, proficiency can be more rapidly achieved. Indeed, Wimmer and Landerl have suggested that eight or nine months are often sufficient for basic proficiency, but they also candidly affirm that certain aspects of German orthography (e.g., consonant clusters) can present continuing difficulties (Wimmer and Landerl 1997: 89–91 and passim). Because French has a deep orthography, with many written markers that are not reflected in pronunciation, proficiency in the French writing system normally requires years (Totereau, Thevenin, and Fayol 1997).

Note that proponents of the "Script Dependent Hypothesis" affirm that some children may have substantial difficulties learning a writing system with a deep orthography, but minimal difficulties learning a writing system with a shallow orthography. Proponents of the "Central Processing Hypothesis" affirm that children having difficulties learning a writing system with a deep orthography will also normally have similar problems learning a writing system for a shallow orthography. Recently, some have suggested that the Central Processing Hypothesis and Script Dependent Hypothesis may be complementary (Geva 1995).

[6]Of course, because of the dominance of consonants in the Hebrew writing system, some might suggest that becoming proficient in the ancient Hebrew writing system was accomplished with particular ease, and at a rapid pace. Of import is the fact that some studies of proficiency in the modern Hebrew writing system (as one's first writing system) have been produced and are, for this article, among the most relevant of all the studies of the development of proficiency in modern writing systems. Levin (personal correspondence) has summarized the progression of facility in the modern Hebrew writing system as follows: (1) Israeli children begin writing words phonetically at around five years of age. (2) Training

The Problematic Term "School"

The definition and delimitation of "Israelite schools" have sometimes been problematic components of the discussion of education in ancient Israel. For example, Whybray proposed the following definition: an "institution" that "existed for the purpose of giving specialized training" in "organized classes comprising a number of pupils, whose teachers were 'professional' in the sense that they were not the parents, or relations, or even tribal heads, of the pupils." Furthermore, he affirmed that the teaching was to be "given on a regular basis and occupied a substantial part, though not necessarily the whole, of their time" (Whybray 1974: 35). Crenshaw has articulated a definition of "school" that many have deemed functional: "By school is meant professional education, which involved both reading and writing, at a specific location to which young people came and for which fees were paid to a teacher" (Crenshaw 1985: 602; cf. 1998: 113). Note that Crenshaw desires to make a strong distinction between "schools" and "guilds."

Because scholarship has often used the term "school" in broad senses (e.g., "Deuteronomic

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in the basic features of orthography, including Masoretic pointing, continues for most children through the age of eight. (3) Most spelling errors disappear by around the age of ten, but some (e.g., the usage of *yod* and *waw* as *matres lectionis*) persist into adulthood even among literate adults (cf. also Share and Levin 1999; Levin, Share, and Shatil 1996; Ravid 1995). In short, multiple years are normally necessary for proficiency. Of course, there are certain aspects of modern Hebrew phonology and orthography that differ from ancient Hebrew (cf. Berent and Frost 1997), but I do not believe that this factor would result in grossly disproportionate differences in the time required for proficiency.

Some might suggest that adult Olim can learn to reproduce the script in a matter of hours and that this is demonstrative of the fact that the Hebrew script is so simple that almost no instruction is needed (in antiquity or in the modern period). The problem with this analogy is that adult Olim already have the cognitive building blocks and the manual dexterity in place, established previously when they learned their first writing system. For this reason, any comparison between modern adult Olim and ancient Israelites learning their *first* writing system is fundamentally flawed.

With regard to Arabic, Assaad Skaff and Helen Sader (personal correspondence) have noted that the short vowels and the long vowels are learned at the same time, along with the consonants. This training begins in earnest during the first grade (although parents often begin instruction in the home at an earlier age). During the succeeding years, proficiency begins to develop, and by the ninth grade ("brevet" according to French nomenclature) students are very capable of writing Arabic with substantial proficiency. Thus, the learning of Arabic parallels, in many respects, the pace of learning modern Hebrew in Israel.

School," "Wisdom School," "Isaianic School"), it was necessary for Whybray and Crenshaw to propose more precise definitions (cf. Person 2002: 7, 65–81). Nevertheless, the definitions Whybray and Crenshaw have articulated are quite rigid. That is, to state that to be a "school" the teacher cannot be related to a pupil (or even a "tribal head") and that teaching must occupy the majority of the teacher's time is problematic. Moreover, to affirm that class size must be part of the equation is quite prescriptive, as is also the notion that there must of necessity have been some sort of tuition (cf. "without money"; Sir 51:25b). To be sure, even some modern schools would not meet some of these criteria. After all, teachers are sometimes related to (a) pupil(s), teachers can teach part-time, and classes can be very small (cf. also Carr 2005: 112–16). Ultimately, because of the (sometimes) broad and (sometimes) narrow definitions of school that have been propounded, I believe that the term school has become polarizing. For this reason, I have avoided using it, preferring the term "formal, standardized education."

Lemaire (1981) has argued that there were numerous schools throughout much of Israel and Judah in the Iron Age, with a broad curriculum and many students. For this reason, subsequent discussions of the problem have sometimes revolved around the pervasiveness of schools. Thus, reacting to Lemaire's thesis, Crenshaw discussed schools and then concluded that "nothing seems to require the existence of public schools, supported by taxpayers and open to everyone" (Crenshaw 1998: 113). Weeks has argued that "the biblical and epigraphic evidence adduced for schools in Israel seems very weak indeed, and can certainly not support any hypothesis of a large, integrated school system" (Weeks 1994: 153). Lemaire's decision to propose such a pervasive system of education was an "Achilles heel," because the evidence could not carry the load with which he saddled it. Therefore, as an *Ausgangspunkt*, I should emphasize my point: there was a mechanism in ancient Israel (defined broadly) that facilitated and orchestrated formal, standardized *scribal* education. I am not here arguing for an educational system serving the non-elite masses.[7]

PALAEOGRAPHY

The focus of palaeography is the establishment of, based on the most pristine extant ancient evidence, (1) the morphology of the letters of a script series, the relative size of the letters, the letter environment (e.g., horizontal proximity and relative vertical positioning of the letters), the stance and ductus of the letters, as well as the relationship of the various letters to the ceiling line; (2) determinations regarding the similarities and differences among the various components of a script series, such as the lapidary and cursives of a script series, along with issues of media and writing instruments (e.g., ink on pottery, chiseled in stone); and (3) the diachronic development and synchronic variation within a script series, including things such as script innovations and preservations.[8]

Salient Features of Palaeographic Method

The premise of the field of palaeography (and all the typological sciences) is that artifacts develop through time and that this development can be discerned in an empirical fashion, described, and used as the basis for typologies (cf. pottery typologies).[9]

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[7]There is no evidence that the script series of ancient Israel and Judah were different (Naveh 1987: 78). That is, the same Old Hebrew script was used for both regions.

[8]The dominant features of a lapidary script are its graphic arrangement (i.e., height and spacing), graphemic clarity, uniformity of graphemic form and size, and general conservativeness (i.e., retarded development). Lapidary inscriptions are normally found on surfaces that were carefully prepared, and in general, they were intended to be permanent. The primary features of a cursive script are the rapidity with which it can be written and its adaptability. For a cursive script, some variation in graphemic form and size is common, stroke curvature tends to be more prominent, letter spacing is more compact, semi-ligatures are more common, and development occurs more rapidly. Writing instruments and media are of fundamental importance in this regard, but not always determinative because cursive scripts can be employed on stone. A cursive script is often categorized as formal cursive, semi-formal cursive, or free cursive. Although these terms will sometimes be used in this article, it should be noted that within the linear Northwest Semitic scripts, the cursive tradition was varied, and although the terms *formal*, *semi-formal*, and *free* are helpful conventions, they should not be considered precise and distinct categories, as Cross noted long ago (Cross 1961a: 144).

[9]It is interesting that some archaeologists consider palaeographic typology to be very imprecise, or even "smoke and mirrors," but nevertheless, affirm the substantial accuracy of pottery typology. The fact of the matter is that palaeographic typologies can be as reliable as pottery typologies. Obviously, the amount of extant pottery of a specific horizon within a pottery series is substantially larger than that of the epigraphic remains of a specific

New finds augment, refine, and revise the dominant typological model (e.g., for a script series or pottery sequence).[10] Note that, first of all, the amount of the provenanced epigraphic data is of critical importance for the science of palaeography (and, of course, for epigraphy in general). That is, statements made on the basis of a large(r) amount of palaeographic data for a script series are more definitive than statements made on the basis of modest amounts of data (i.e., because the extant epigraphic remains of a script series are a fraction of the epigraphic material produced, and larger sample sizes permit more definitive conclusions). Second, and also of great importance, is the general quality of the data. Inscriptions (or exemplars of letters within an inscription) that are clear (i.e., not very faded or abraded) are the most valuable.[11] Moreover, inscriptions that contain a date formula or were found in a primary stratigraphic

context (or are datable via some other means) are most helpful in establishing chronological "benchmarks" for a script typology. Multiple inscriptions found in secure primary contexts in sequential strata of the same tell are often of particular import (because the chronological sequencing is arguably more secure). In addition, the geographic and chronological distribution of the data must be factored into the assessment as well. That is, analyses of the "targeted" script series that are based on palaeographic data from various sites and multiple horizons provide the best window on the diagnostic features, developments, and variation within a script series.[12] Based on these cumulative data, a reliable "script typology" can be developed for a script series. It should be noted that the more sophisticated the analysis and the more rigorous the method, the more reliable the conclusions; that is, not all palaeographic analyses are equal.

It has sometimes been said that the synchronic variation and diachronic development of the Old Hebrew cursive script is poorly attested and poorly understood. For this reason, palaeographic analyses of Old Hebrew are said to be very tenuous.[13] However, the number (and quality) of Old Hebrew inscriptions (of the eighth through early sixth centuries) that are datable on the basis of non-palaeographic criteria is quite substantial. For example, the Kuntillet ʿAjrud inscriptions can be dated to the (very)

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horizon within a script series, but the epigraphic evidence for the horizons of many script series is not negligible, and the innumerable intricacies of the morphology of the letters of a horizon of a script series contain enormous amounts of data that can be analyzed and documented in an empirical manner by a trained palaeographer. Regarding palaeographic method, see Cross (1982) and Rollston (2003a: 150–57; 2004). Suffice it to say that I believe the critiques of palaeography by S. Kaufman (1986) and B. Zuckerman (2003) are important, and I will be responding especially to these in another venue.

It is also intriguing that some non-palaeographers will refer to variation in the writing of a modern script (e.g., the Latin cursive used in American English), note the presence of radical variation sometimes in the modern period, and *assume* that this is a relevant means for evaluating the accuracy of palaeography. This is hardly, however, a compelling criticism. Analyses of an ancient script series must be based on the *extant ancient evidence* of a series and the synchronic variation and diachronic development attested for that ancient series. Modern analogies of variation for a modern script series are of negligible value, as much more script variation is tolerated within the modern period.

[10]On some (quite rare) occasions, an ancient inscription will nuance epigraphic knowledge (e.g., script typologies, orthography, etc.) in rather dramatic ways. This was the case with the Tell Fakhariyeh bilingual. See Cross (1995). Data such as this are not problematic, of course, but rather serve to complement previous conceptions.

[11]Note that often within an *editio princeps*, hand drawings of faded or abraded letters are included (i.e., drawn). This is appropriate. However, hand drawings of faded or abraded letters should hardly be the basis of a script typology, and it is most unfortunate that sometimes epigraphers (and even palaeographers at times) will use faded or abraded forms (or drawings of such forms) in the construction of a palaeographic typology of a script series. This is not sage, as a script typology must be based on the clearest exemplars of a script series.

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[12]For example, if the only extant ancient data for eighth-century Old Hebrew came from one site and if the only extant ancient data for seventh-century Old Hebrew came from a different site, it would not be possible to draw definitive conclusions (because it could plausibly be argued that the differences were the result of regional variation, not diachronic development).

[13]For example, Bordreuil, Israel, and Pardee, the authors of the *editio princeps* of the "Moussaieff Ostraca," begin their palaeographic analysis of the Moussaieff Ostraca with the following words: "Trop souvent, l'étude de son écriture ne permet guère de tirer de fermes conclusions sur la date d'un document rédigé en paléo-hébreu, écriture dont l'évolution générale est relativement malaisée à percevoir" (1996: 57). The fact of the matter is that scholars such as Birnbaum, Naveh, and Cross (etc.) have carefully and accurately detailed the development of the Old Hebrew cursive script at length. Nevertheless, the palaeographic analyses by these scholars are not mentioned. Rather, Renz's *Handbuch der althebräischen Epigraphik* (1995) is used, and reference to his line drawings of Hebrew inscriptions is frequently made. Renz's handbook is a superb catalog, and contains detailed bibliographic information and references to variant readings. For this reason, it is a sine qua non. However, the drawings in this volume should be used with caution (see Rollston 2003a: 158–59, n. 60).

early eighth century.[14] Moreover, there are scores of legible cursives from Samaria that can be dated reliably (based on a constellation of data) to the early eighth century.[15] Also from the eighth century are the Khirbet el-Qom cursives (primarily carved in stone) and the Beth Sheʾan Ostraca.[16] From the late eighth century are the Samaria Joint Expedition (cursive) inscriptions, and from the same basic horizon is the Royal Steward Inscription.[17] Note that, cumulatively, these epigraphs come from various regions, north and south, on various media. Moreover, there is also a substantial amount of data for the Old Hebrew script series of the terminal period of the seventh century and the early sixth century. For example, scores of the Lachish Ostraca and Arad Ostraca can be dated to this period, and the Horvat ʿUza Ostraca

also hail from this horizon.[18] Cursive inscriptions from the (very) late eighth century to the mid-seventh century are also attested (e.g., Arad IX–VIII; Gibeon), as are some from the second half of the seventh century (e.g., Mesad Hashavyahu).[19] Finally, it should also be noted that some Old Hebrew inscriptions can be dated to the ninth century, but these are often very fragmentary.[20] Comparative analysis of these Old

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[14] The *editio princeps* of the Kuntillet ʿAjrud epigraphs has regrettably not yet appeared. For the present, see especially Meshel (1978). The pottery assemblage has been published, and Ayalon dates it from the late ninth to the beginning of the eighth century (1995: 198). Carbon dates for the site suggest that it was occupied from the end of the ninth century to the beginning of the eighth century B.C.E. (Segal 1995: 212). The script at Kuntillet ʿAjrud is typologically older than the script of the Reisner Samaria Ostraca.

Schniedewind (2004: 61 and n. 23) has stated that the Ophel Inscription hails from the ninth century. However, the script of this inscription exhibits several hallmark features of the eighth century, and so I assign it to this century, not earlier. Naveh has dated it broadly to the seventh century (1982: 195), and Ben-Dov to the eighth–seventh (1994: 73). Schniedewind (2004: 61) also dates a monumental inscription from Samaria to the ninth century. This inscription is broken and very short and so precise dating is not possible, but the inscription is normally assigned to the eighth century (Birnbaum 1957: 33–34).

[15] The *editio princeps* of the Reisner Samaria Ostraca was published by Reisner, Fisher, and Lyon (1924: 227–46). Note that I am currently in the process of producing a new edition of the these ostraca. I. T. Kaufman (1966: 85–97) has analyzed not only the official publications, but also Reisner's field diary. He has noted that the ostraca were found in fill *below* the floor of the destruction level from 722 B.C.E. In addition, it should be mentioned that there were 9th- and/or 10th-, and 15th-year ostraca found together. The year-dates on the ostraca are arguably regnal years. The cumulative data suggest the reign of Jeroboam II (ca. 786–746 B.C.E.), whose reign was long enough to accommodate the reference to a year 15. Tappy (2001) has some discussion of the archaeological context of the ostraca, but did not use Reisner's field diary. Thus, although dated to a certain extent, I. T. Kaufman's discussion of the archaeological context of the ostraca remains seminal and authoritative.

[16] For El-Qom, see Dever (1969–1970). For the Beth Sheʾan Ostraca, see especially Mazar (1999).

[17] For the Samaria Joint Expedition inscriptions, see Birnbaum (1957). For the Royal Steward Inscription, see Avigad (1953).

[18] For discussion of the date of the Arad strata, see Mazar and Netzer (1986); Ussishkin (1988); Mazar (1997); Herzog (2002); and Kletter (2004). For the Lachish Ostraca, see H. (Torczyner) Tur-Sinai (1938) [Ostraca 1–18]; Diringer (1953) [Ostraca 19–21, and 1–18]; Aharoni (1975) [Ostracon 22]; Lemaire (1976) [Ostracon 23, from Stratum III]; and Ussishkin (1978) [Ostraca 24–30]; Ussishkin (1983) [Ostraca 31–32]. Cf. Ussishkin (1996). For the published Horvat ʿUza Ostraca, see Beit-Arieh (1986; 1993; 1999). Once all of the Old Hebrew ostraca from Horvat ʿUza are published (some 20 remain to be published), it will be interesting to see if there are certain Edomite features that have invaded the script.

[19] For the *editio princeps* of the Gibeon inscribed jar handles, see Pritchard (1959; 1962) and Frick (1974). Currently, I am in the process of producing a new edition of the Gibeon inscribed jar handles, based on new collations, new photographs, and high-resolution digital images. For the Mesad Hashavyahu inscriptions, see Naveh (1960; 1962a). For the dating of these inscriptions, see also Naveh (1962b).

[20] Aharoni has stated that Arad 76 came from Stratum XI, having been found in a building east of the "sanctuary." He dated the sanctuary and Stratum XI to the tenth century (1981: 5, 98). Herzog has argued that "the assumed existence of a temple in Stratum XI was not validated by the evidence." He then concluded that "it seems safer to attribute the construction of the temple [Aharoni's "sanctuary"] to Stratum X." Note that Aharoni dated Stratum X to the ninth century. Herzog dates Stratum XI to the second half of the ninth century and the first half of the eighth century, and Stratum X to the mid-eighth century (Herzog 2002: 14). Based on palaeographic criteria, I do not consider it tenable to date Arad 76 later than the ninth century, regardless of the stratum with which it is associated (note, though, that my dates fall within the chronological horizons affirmed especially by Aharoni and Herzog). Arad Ostraca 77–79 are so fragmentary and faded that I do not consider it possible to render a secure palaeographic assessment. Some linear alphabetic inscriptions have been found at Hazor (Yadin et al. 1960; 1961). The inscriptions from Hazor IX and VIII cannot be classified as Old Hebrew, though (cf. Naveh 1968). Moreover, the inscriptions from Hazor VI and Va (eighth-century strata) are also very short and fragmentary. Inscriptions (also short and fragmentary) have also been found in Strata VI and V of Tel Reḥov, strata that Mazar (2003) associates with the tenth and ninth centuries. Tell Batash ("Timnah") has also yielded an early (fragmentary) inscription (Kelm and Mazar 1995: 111). With regard to some of these inscriptions and the issue of national script, see Rollston (in press) and Sass (2005: 87–88). The Gezer Calendar has been dated to the tenth century (cf. Cross and Freedman 1952: 45), but because I am not convinced that this inscription is Old Hebrew, I do not include it in this article (cf. Naveh 1968: 69; 1987: 65).

Hebrew inscriptions (normally using non-epigraphic data as a control for the dating) demonstrates that there are diagnostic features that distinguish the major horizons (e.g., early eighth, mid to late eighth, very late eighth to mid seventh, very late seventh to early sixth), regardless of the site at which they were found (and the distance between them), or the media. Naturally, new discoveries of provenanced inscriptions from this script series will augment, refine, and nuance script typologies, but the data for the Old Hebrew script series of the eighth through early sixth centuries are not negligible.

Also of import are the following factors: (1) For the Old Hebrew script there is basic uniformity between the semi-formal cursive script employed on ostraca (i.e., ink on pottery) and that of the semi-formal cursive script inscribed in pottery or even carved on "large" stone surfaces. (2) The script of Old Hebrew seals is normally a formal cursive script (rather than the semi-formal cursive script), and this script is more conservative typologically than the semi-formal cursive. Thus, those attempting to do palaeographic analyses (and those attempting to critique it) must be cognizant of the presence of both the formal cursive and the semi-formal cursive, lest erroneous conclusions be drawn regarding developments in the Old Hebrew script. To be sure, there is substantial continuity between the semi-formal cursive script (e.g., of ostraca and various incised inscriptions) and the formal cursive, but it is clear that the formal cursive script of seals (incised, of course, as well) does exhibit certain differences from the semi-formal cursive. For this reason, the palaeographic dating of Old Hebrew seals is complicated, and the plus and minus range must be larger than for the Old Hebrew semi-formal cursive.[21] Again, future discoveries will augment current typologies of the

Old Hebrew script series (the semi-formal cursive, and formal cursive); however, the fact remains that the quality and quantity of the provenanced, datable data are good.

Old Hebrew Palaeography: Diachronic Development with Synchronic Consistency

Weeks has asserted that "it is simply a fallacy to suppose that it [the Iron Age Hebrew script] was uniform: it went through periods of very rapid development, and different styles certainly existed side by side" (Weeks 1994: 152). The fact of the matter is that no trained palaeographer would suggest that there was some sort of "uniformity without development or variation" during the course of some two centuries (Cross 1961b; 1962a; 1962b; Naveh 1987; Rollston 1999).[22] Rather, trained palaeographers would argue, based on analyses of the actual epigraphic evidence, that the Old Hebrew script reflects diachronic development and synchronic consistency (with synchronic variations restricted to perimeters that can be described in an empirical fashion). At this juncture, I provide a brief synthesis of the major diachronic developments within the Old Hebrew script so as to delineate the basic morphology, stance, and ductus, while also providing some information about synchronic variation.[23] It is not my intent here to

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[21] Avigad has summarized this issue succinctly: "The study of ancient Hebrew seals often encounters difficulties in determining the date of seals according to criteria of script forms. Whereas with the cursive script, written in ink or incised, changes gradually occur in letter forms and it is thus possible to trace their chronological development, the script appearing on seals, which is engraved into hard stone, is necessarily formal and conservative, retained by the seal-cutters for reasons of tradition and professional convenience over an extended period" (Avigad 1986: 113). The point is that the formal cursive script of seals and the cursive script of ostraca (and various incised and chiseled inscriptions) reflect some differences (especially in terms of the preservation of typologically "older" forms within the formal cursive). N. S. Fox's

statements about palaeography are problematic at times, as she does not distinguish the differences between the factors involved in the palaeographic dating of the formal cursive script of Old Hebrew seals and that of the Old Hebrew cursive of ostraca, etc. (Fox 2000: 32–34). Vaughn has discussed the palaeographic dating of seals (Vaughn 1999a; 1999b). Note that Vaughn focuses on the formal cursive script of Old Hebrew seals, not the semi-formal cursive script. This is a fundamental point. For an evaluation of Vaughn's fine monograph, especially his palaeographic discussion, see Rollston's review (Rollston 2003b). Finally, see Herr's published dissertation on seals (Herr 1978) and also his important review of Avigad and Sass's *Corpus of West Semitic Stamp Seals* (Herr 1998).

[22] The development of the Old Hebrew script was outlined by Cross in three seminal articles (Cross 1961b; 1962a; 1962b). I. T. Kaufman's work (a dissertation written under Cross in 1966) is also of fundamental importance, as are a number of contributions from Naveh (1968; 1987; 2000). My own analysis of the Old Hebrew script builds upon the foundation of Cross, Naveh, and Kaufman, based on recollections of the actual inscriptions, analysis of the best original negatives, many new photographic images, and new digital tools (Rollston 1999; in press).

[23] Throughout this section of the article, a system of abbreviations is employed. Ad = Arad; Gn = Gibeon; Lh = Lachish; Mh

TABLE 1: ʾAlep

Lh2.1.a1	Ad40.5.a3	Sa2.5.a1	K.Ajrud

duplicate my more detailed analyses of the Old He-
brew script, but rather to provide a synopsis of major
script-facets (e.g., Rollston 1999; in press). Note that
forms that appear in the script charts and drawings
are flagged with an asterisk.

ʾAlep (*table 1*). Among the earliest exemplars of
the cursive Old Hebrew ʾalep are those of the *Kun-
tillet ʿAjrud inscriptions (ca. 800 B.C.E.) and the
*Reisner Samaria Ostraca (ca. 777–770 B.C.E.). (1)
The hallmark feature of the eighth-century Old He-
brew ʾalep is the dramatic increase in the length of
the vertical shaft (e.g., compared with the classical
tenth-century Phoenician forms such as Ahiram); for
this reason, the vertical shaft is consistently longer
(normally substantially so) than the top horizontal
crossbar (e.g., Sa17a.1.ʾ1).[24] This feature is also
present in the Khirbet el-Qom epigraphs from the
eighth century, the Siloam Tunnel Inscription (very
late eighth century), and the City of David Inscrip-
tion 2.[25] Some of the fragmentary ostraca from Beth

She̓an reflect this feature as well. (2) Another im-
portant early feature found in (some of) the Reisner
Samaria Ostraca is the presence of a cursive reflex
(i.e., "tick") at the right terminus of the bottom hori-
zontal, which descends leftward at an oblique angle
(e.g., *Sa2.5.ʾ1; Sa24.1.ʾ1; 51.3.ʾ1). This morpho-
logical feature is also present in the ʾalep of the
Royal Steward Inscription (late eighth century), and
Samaria Joint Expedition Ostracon 1142, and a vari-
ant of it is attested in the corpus of the Gibeon Jar
Handles (e.g., Gn17, 21, 22), suggesting a floruit
for the tick that was rather wide, though confined to
the eighth and perhaps early seventh centuries. (3)
Note that the cursive tick is *not* present in the corpus
of epigraphs from Arad VIII (very late eighth to
early seventh century) or Mesad Hashavyahu (ca.
mid to late seventh century).[26] Moreover, the evi-
dence from these two sites (Mesad Hashavyahu and
Arad) demonstrates that, during the seventh century,
the relative length of the vertical shaft generally
decreases, with the vertical being shorter than the
top horizontal crossbar (e.g., *Ad40.5.ʾ3). More-
over, this trend (i.e., the shorter vertical shaft) per-
sists during the late seventh and early sixth centuries
B.C.E., as demonstrated by epigraphs from Arad VII–
VI, Lachish II (e.g., *Lh2.1.ʾ1), and Horvat ʿUza.
The point is that there are consistent diagnostic fea-
tures that distinguish the eighth-century Old Hebrew
ʾalep from the late seventh-century and early sixth-
century ʾalep. Moreover, the late eighth-century and
early seventh-century Old Hebrew ʾalep reflects in-

= Mesad Hashavyahu; Sa = Reisner Samaria Ostraca; Sa.JE.BL =
Samaria Joint Expedition Barley Letter. In addition to identifying
the site, this system also contains information that indicates the
precise letter of the precise inscription to which there is reference.
Thus, the abbreviation Sa17a.1.ʾ1 signifies Ostracon 17a from
Samaria, the first line, and the first ʾalep of that line.

[24] This is not simply an observation; rather it is based on mea-
suring the length of the vertical stroke and the top horizontal cross-
bar and then comparing the relative length of each. Note that the
form of ʾalep in the Mesha Stele reveals similar tendencies with
regard to this feature, as does also the el-Kerak Inscription. The
Phoenician Kition Bowl (ca. 800 B.C.E.) exhibits a long vertical as
well (Kn1.5.ʾ1). Similar tendencies are sometimes present in the
Deir ʿAlla Plaster Texts (ca. 700 B.C.E.). This evidence suggests
that this may be a characteristic of certain national cursive scripts
of this general period, rather than a distinctive feature of the
Hebrew script.

[25] I date City of David Inscription 2 to the eighth century based
on various palaeographic features, including the hallmark eighth-
century feature of ʾalep: the long vertical. For the *editio princeps*,
see Naveh (2000: 1–14, esp. pp. 2–3).

[26] Cross has argued that this feature persists into the late
seventh century, based on its presence in the Mesad Hashavyahu
Ostracon and the Gibeon Inscribed Jar Handles (Cross 1962b).
However, based on my collation of this ostracon, analysis of the
original film negative with a stereo microscope, and high-resolu-
tion images, it is my opinion that there is no reflexed ʾalep attested
among the Mesad Hashavyahu Ostraca. Moreover, I prefer to date
the Gibeon Jar Handles to ca. 725 to 675 B.C.E., pace Cross.

TABLE 2: He

Lh3obv.1.h1	Ad1.8.h1	Sa6.2.h1	K. Ajrud

TABLE 3: Kap

Lh3rev.19.k1	Ad7.6.k1	Ad40.8.k1	K. Ajrud

termediate development. Regarding the ductus, it is important to note that the vertical stroke is consistently the final stroke (and it is always a downstroke). Ultimately, the evidence demonstrates that there are distinct diagnostic features for the chronological horizons of Old Hebrew, and there are also consistent aspects of the ductus.

He (*table 2*). The eighth-century Old Hebrew *he* consists of a vertical stroke and three horizontals (e.g., Kuntillet ʿAjrud and Reisner Samaria Ostraca). It should be noted that the rightward extension ("overlap") of the top horizontal stroke is of typological significance. That is, it is routinely absent at *Kuntillet ʿAjrud, is absent at Beth Sheʾan, and is normally slight in the Reisner Samaria Ostraca (e.g., *Sa6.2.h1; 17a.2.h1; 51.3.h1; 55.1.h1); however, it is normally more substantial in the late seventh and early sixth centuries, for example, in Arad VI–VII and Lachish II (e.g., *Ad1.8.h1; 17rev.9.h1; *Lh3obv.1.h1). Exemplars from the late eighth and early seventh centuries often reflect intermediate development (e.g., SaJE.BL; Ad60.4.h1; 40.4.h1). Rarely, an archaic form will appear in a corpus from the late period (e.g., Lh1.5.h1). Regarding ductus, the evidence suggests that the top horizontal was normally made from right to left, and that the vertical stroke was a downstroke (note ink blotting).

Kap (*table 3*). There is a substantial amount of information about the synchronic variation and diachronic evolution of the Old Hebrew cursive *kap*, because of the rapidity of the development of this letter during Iron II. The salient components of its morphology and development can be readily summarized. During the early eighth century, this letter consists of a main shaft and two oblique strokes that are both "penned into" the main shaft. The top oblique stroke is often at an angle of 80 to 90 degrees, and the angle of the bottom oblique is normally 40 to 50 degrees above "absolute horizontal" (*Kuntillet ʿAjrud; Sa44.1.k1). During the late eighth and early seventh centuries, the angle of the bottom oblique decreases (sometimes approaching absolute horizontal); the top oblique continues normally to be penned directly into the vertical shaft (*Ad40.8.k1; 44.2.k1; 49.4.k1). For some mid- to late-seventh-century epigraphs, the top oblique is normally penned into the bottom oblique (rather than the main shaft), and it has migrated substantially leftward on the bottom oblique (e.g., Mesad Hashavyahu). During the late seventh and early sixth centuries, the angle of the bottom oblique is routinely near, or at, absolute horizontal (*Ad7.6.k1; 18obv.3.k1; 24rev.17.k1) or even below it (Lh2.3.k1; *Lh3rev.19.k1). Moreover, the tendency for the top oblique to migrate leftward (on the bottom oblique) continues.

TABLE 4: Mem

Lh3rev.19.m1	Ad1.5.m1	Ad50.1.m1	Sa11.2.m1

TABLE 5: Qop

Lh3obv.4.q1	Ad40.12.q1	Sa5.2.q1	Ad76.5.q1

Mem (*table 4*). The Iron Age Hebrew *mem* (and *nun*) evolved in various ways during the eighth through sixth centuries. The angle of the main vertical shaft of the Iron Age Hebrew *mem* is one diagnostic component of this letter (the morphology of the head is another). During the early eighth century, the vertical shaft was normally penned at angles ranging from 50 to 60 degrees (Sa10.1.m1; *Sa11.2.m1; 17a.1.m1; 20.2.m1; 27.2.m1; 48.2.m1; 55.2.m1). However, during the late seventh and early sixth centuries, the letter's stance had shifted radically in most exemplars of the cursive script, and the vertical shaft was normally penned at angles ranging from 20 to 35 degrees (*Ad1.5.m1; 17obv.6.m1; Lh1.5.m1; 2.3.m4). During the late seventh and early sixth centuries, some exemplars reflect substantial evolution of the morphology of the head and shaft (*Lh3rev.19.m1). Provenanced Old Hebrew epigraphs from the late eighth and early seventh centuries reflect intermediate development (*Ad50.1.m1), ranging from approximately 40 to 55 degrees.[27] With

regard to the angle of the shaft, rarely a harbinger form will occur (Ad60.4.m1), as will also an archaic form (e.g., Mesad Hashavyahu).

Qop (*table 5*). The Old Hebrew *qop* was consistently made with three strokes during Iron II: two semicircular downstrokes which formed the head, and a vertical shaft. The earliest good evidence for the Old Hebrew *qop* derives from Arad (*Ad76.5.q1) and Kuntillet ʿAjrud (abecedary). The exemplars of *qop* from these corpora are archaic, with the vertical shaft beginning at, or near, the top of a closed head. Significantly, in addition, the two semicircular strokes forming the head are offset very little, sometimes not at all. The Reisner Samaria Ostraca generally exhibit two typological developments, from the Kuntillet ʿAjrud and early Arad exemplars: (1) there is more of an offset head; and (2) the vertical shaft no longer begins at the top of the head (e.g., *Sa5.2.q1). The top of the head, however, still remains consistently closed. Note that the angle of the vertical shaft ranges from 80 to 90 degrees during the early eighth century. During the mid to late eighth century and the early seventh century, the head of *qop* was sometimes closed (e.g., Ad60.4.q1), but the open-headed type is sometimes present as well (SaJE.BL.2.q1; *Ad40.12.q1), harbinger forms that become the norm in succeeding periods. The vertical shaft some-

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[27]Rarely, a *mem* from an inscription that is "early" will have a vertical shaft at an angle more characteristic of a later period. Normally, the cause of this is the convex or concave shape of the media (e.g., sherd). Nevertheless, the extant evidence from stratified (and thus provenanced) inscriptions reveals that the angle of the shaft of *mem* is an important diagnostic feature.

TABLE 6: Šin

Lh4obv.3.sh1	Ad1.4.sh1	Ad40.5.sh1	Sa17a.1.sh1

times (but not always) shows a tendency to become more oblique through time. Exemplars from the late seventh century have an open head as well (e.g., Mh1.4.q1; 1.10.q1; 1.11.q1). During the late seventh and early sixth centuries, the head normally continues to be open, sometimes very broadly so (e.g., *Lh3obv.4.q1; Lh4obv.6.q1; Ad1.5.q1), although there is evidence that the closed head persisted sometimes in the more formal cursive (e.g., Ad24rev.15.q1). The stance of the majority of exemplars from the late seventh and early sixth centuries is normally more oblique, ranging from 50 to 75 degrees, and thus, with obvious typological significance. Note that the vertical stroke of this letter was normally the final stroke.

Šin (*table 6*). The Old Hebrew cursive *šin* was often formed with four separate (down) strokes, analogous to /W/ (cf. I. T. Kaufman 1966: 85–97; Rollston 1999). (1) The normal angle of the left external stroke of the early eighth century (Kuntillet ʿAjrud; *Sa17a.1.š1) was approximately 80 to 90 degrees (top left), with some exemplars actually exhibiting a top-right stance (Sa21.1.š1; 30.1.š2). The normal angle of the right external stroke was approximately 55 to 65 degrees (top right).[28] During the late seventh and early sixth centuries (Arad VII–VI; Lachish II), the normal angle of the left external stroke ranges from 35 to 60 degrees, and that of the right external stroke from 30 to 45 (*Ad1.4.š1; *Lh4obv.3.š1). The angles of the exemplars from the late eighth- and early to mid-seventh centuries are often intermediate (e.g., *Ad40.5.š1; Ad40.14.š1). The best exemplars of the large Mesad Hashavyahu ostracon (e.g., Mh1.5.š1; 1.8.š1) reflect angles that fall within the same basic range as the Arad VII–VI

and Lachish II.[29] The essential point is that the data from provenanced cursive exemplars demonstrate that the angles of the external strokes are typologically significant. (2) Also of typological significance is the fact that the locus of the junction of the two internal strokes descends through time (Cross 1962a: 41). Note, of course, that the script exemplars from the ninth and early eighth centuries (e.g., Mesha; el-Kerak; Kition Bowl) have very high junctions (i.e., at the upper terminus of both strokes). This feature is present (to some extent) in some exemplars from Kuntillet ʿAjrud, but gradual descent is noticeable here as well. The Reisner Samaria Ostraca (e.g., Sa30.1.š2; 17a.1.š1) reflect a similar trend (i.e., descent of junction point).[30] This development continues during the seventh and early sixth centuries, with many junctions being very low (e.g., *Ad1.4.š1; *Lh4obv.3.š1). It should be noted that there is a general tendency for the internal strokes to become more vestigial through time. Note that forms with (almost) completely vestigial left internal strokes (e.g., Ad10.1.š1; 11.1.š1) must not be construed as a *šin* with high junctions. Rather, it is readily apparent that substantial morphological evolution is present within these forms, so much so that the left external stroke is nonexistent, something that ultimately leads to a trident-shaped *šin*.

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[28] The angle of the internal strokes is also important, but I do not provide these details in this article.

[29] Because of the convex shape of Mesad Hashavyahu Ostracon 1, and its large size, it is normally difficult to do precise quantitative analyses of the entire ostracon. To be precise, the available photos are panoramic (rather than detailed photos of segments). Because of the convex shape and the large size, the camera lens cannot accurately capture the angles of all letters of the whole ostracon. Those that are directly under the camera lens are fine, but those that are not are difficult to analyze (i.e., using quantitative methods). This problem is often present, to some degree, with ostraca, but with this ostracon the problem is substantially more extensive.

[30] Note the high junction point of a First Temple Period monumental inscription (Naveh 2000: 1). Note also that the angle of the external verticals ranges from approximately 70 to 80 degrees.
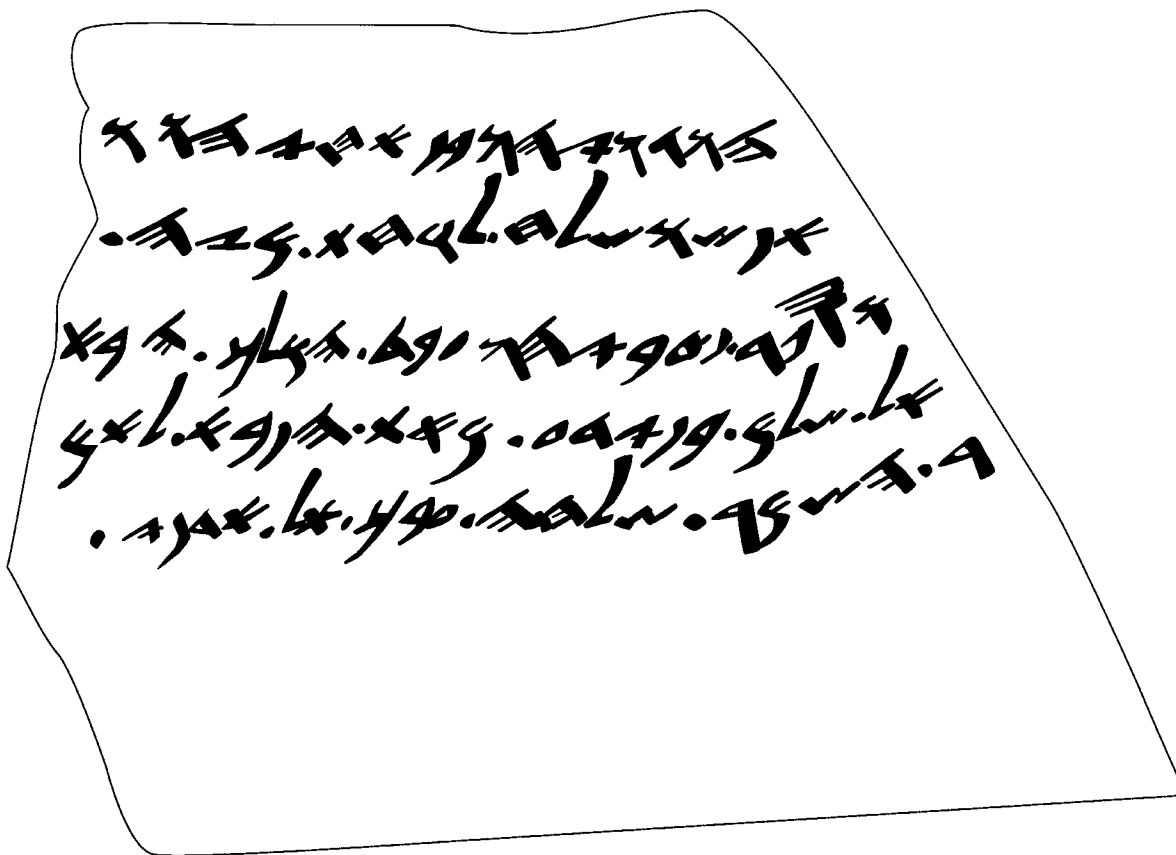
Fig. 1. Lachish 3 (reverse). Drawing by Christopher Rollston.

In sum, the Old Hebrew script reflects clear developments during the eighth through sixth centuries, and these developments can be discerned and described in an empirical manner. Moreover, the Old Hebrew script of a specific chronological horizon also reflects synchronic consistency (with modest variation within certain perimeters). That the Old Hebrew epigraphic record reflects synchronic consistency *and* diachronic development is significant, because it necessitates a mechanism: formal, standardized scribal education.

CASE STUDY OF LETTER
ENVIRONMENT: *SAMEK-PE* SEQUENCE

Letter morphology, stance, and ductus are critical aspects of palaeographic analysis. Nevertheless, the letter environment is also of fundamental importance. That is, ancient scribes of a script series were also trained to know conventional practices regarding relative spatial relationship of letters: letters were certainly not conceived of as being some sort of isolated entity. The *samek-pe* sequence constitutes a superb case study of this aspect of palaeographic analysis (see fig. 1).

Based on the attested exemplars in the corpus of provenanced Old Hebrew inscriptions from the eighth through early sixth centuries, it is readily apparent that the head of the Old Hebrew *samek* was consistently initiated above the "ceiling line." Moreover, there are a number of examples of the sequence *samek-pe* in provenanced Old Hebrew inscriptions; therefore, it is possible to analyze with precision the relative heights of *samek* and *pe* when they are in sequence (a particularly useful tool to compare relative size, stance, and relative height). Note, therefore, the *samek-pe* sequence in the following Old Hebrew inscriptions from various periods and sites:

TABLE 7: Bet

Hebrew Lachish 2	Hebrew Samaria 18	Aramaic Saqqarah Papyrus	Aramaic Amman Citadel	Phoenician Kition Bowl

Kuntillet ʿAjrud (abecedary), Reisner Samaria Ostraca (e.g., Sa29.3.s1), Royal Steward Inscription, Mesad Hashavyahu (Mh7.2.s1), Arad (Ad3obv.7.s1; 16.8.s1), and Lachish (Lh3obv.5.s1; 3obv.9.s1; 3obv.10.s1; *Lh3rev.19.s1; 5.6.s1; 6.4.s1; 6.14.s1; 11.4.s1; 18.1.s1).[31] Within every single case, *samek* is substantially higher than the *pe* that follows, and normally the *samek* simply towers over *pe*.[32] That is, Old Hebrew scribes were meticulous about the morphology and stance of the letters they penned, but in addition, they were also meticulous about maintaining precise conventional spatial relationships of letters. I would argue that this sort of precision must be the result of specialized curricular training in script production.[33]

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[31] Because of the constrictive nature of seal registers, it should be expected that the *samek-pe* sequence in seals might not reflect this feature. However, note that a seal from Megiddo has this sequence, and the *samek* here is also elevated above the *pe* (i.e., the bottom horizontal of the *samek* is at the level of the top of the *pe*'s head). See Avigad and Sass (1997: no. 85).

[32] For additional examples of the *samek* in other "sequence contexts," see the following: City of David Inscription 2 (Naveh 2000: 2); Mh1.4.s1; 1.5.s1; 1.7.s1; Ad2.6.s1; 18obv.5.s1; 38.1.s1; 48.2.s1; Lh4.obv.6.s1; and 4rev.9.s1. For Reisner Samaria Ostracon 16a, note that Reisner has drawn SA16a.1.s1 poorly, failing to capture the height of the *samek*. This error is perpetuated in Renz (1995). See also two fine exemplars in the fragmentary Ophel Stone Inscription. Rarely are there examples of *samek*'s having been written "lower" (Ad38.1.s1; Hr7.1.s1). Nonetheless, "sequence context" is of fundamental importance for palaeography (and is diagnostic in various ways), and the data from provenanced sequences of *samek-pe* demonstrate clearly the relative heights. Of course, the *samek-pe* sequence in the Gezer Calendar reflects Phoenician line-position, as is entirely appropriate.

[33] That is, it is difficult to account for this sort of precision and consistency without positing formal, standardized training. Coincidence surely cannot account for it, but curriculum can readily do so. Note that the forger(s) of the Moussaieff Ostraca and the Baruch Bulla was (were) obviously *not* aware of this aspect of Old Hebrew palaeography (Rollston 2003a: 160–62).

Ancillary Data: Selected National Script Isographs

The Old Hebrew and Aramaic scripts evolved from the Phoenician *Mutterschrift*.[34] Based on comparative analyses of the Phoenician script and the earliest Old Hebrew and Aramaic inscriptions, a consensus has developed that the Old Hebrew script became an independent national script during the ninth century B.C.E. and that the Aramaic script separated from the "prestige" Phoenician script at some point during the late ninth or early eighth century B.C.E. (cf. Naveh 1987: 53–124, esp. 80; cf. Rollston in press). These alphabetic national script series (i.e., Phoenician, Old Hebrew, and Aramaic) are dominant in the first millennium. The critical point, though, is this: there are discernible diagnostic differences between the Old Hebrew, Phoenician, and Aramaic scripts. That is, script isographs are present. For the purposes of demonstrating the point, I will summarize some macro differences, based on some standard exemplars of two letters of the target script series.

Bet (*table 7*). The *Kition Bowl typifies the standard Iron Age cursive (and lapidary) Phoenician *bet*. The head of the *bet* is consistently closed. Regarding stance, the Phoenician *bet* is often upright (e.g., the Old Byblian), but also often top-left (e.g., Kition Bowl). The early Aramaic *bet* has similar morphological features, including the closed head and the top-left stance (e.g., *Amman Citadel; Zakur Stele; Sfire). Significantly, the head of the Aramaic cursive *bet* begins to open in the eighth century, as demonstrated by the morphology of certain exemplars on the Hamath Bricks and the Nimrud Ostracon. The open-headed *bet* becomes regnant in the Aramaic

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[34] For the Phoenician script, see McCarter (1975) and Peckham (1968). For the Aramaic script, see Naveh (1970).

TABLE 8: Dalet

Hebrew Lachish 4	Hebrew Samaria 6	Aramaic Saqqarah Papyrus	Phoenician Kition Bowl	Phoenician Yehimilk

cursive during the seventh century (e.g., *Saqqarah Papyrus; Assur Ostracon). The standard Old Hebrew *bet* (e.g., Kuntillet ʿAjrud; *Reisner Samaria Ostraca; Beth Sheʾan; City of David Inscription 2; Royal Steward; Arad; and *Lachish), however, consistently has a closed head. Regarding stance, the Old Hebrew *bet* is consistently top-right (e.g., Sa18.1.b1) and becomes progressively more so during the course of the eighth through sixth centuries (e.g., Lh2.4.b1).[35] The stance and morphology of the head are diagnostic national features: the Old Hebrew *bet* is distinct, differing from the Phoenician and Aramaic script series.

Dalet (*table 8*). The tenth-century Phoenician *dalet* is delta-shaped (e.g., *Yehimilk), but the Phoenician Kition Bowl reflects the fact that the right downstroke begins to lengthen during the late ninth and early eighth centuries (forming a "leg"). This basic morphology persists in the Phoenician series during the Iron Age. The early period of the Aramaic series reflects the same basic morphology present in the Phoenician series (e.g., the *Kition Bowl). However, during the eighth century, the head of the cursive *dalet* opens (e.g., Nimrud Ostracon), and this development is regnant in the seventh-century Aramaic cursives (e.g., Assur Clay Tablets; Assur Ostracon; *Saqqarah Papyrus) and persists in the Aramaic series for centuries (and becomes the basis for further developments). Significantly, the head of the Old Hebrew *dalet* of the eighth through sixth centuries (from Kuntillet ʿAjrud and the *Reisner Samaria Ostraca to the *Lachish II Ostraca) is consistently closed (although various other developments occur).

That is, the morphology of the Old Hebrew *dalet* of the eighth through sixth centuries exhibits differences from the Aramaic series of the eighth through sixth centuries. Of import is the fact that similar morphological differences are present between the Aramaic cursive ʿ*ayin* and *reš*, with the open-headed forms being the norm for Aramaic, but with Old Hebrew consistently retaining the closed-headed forms.

This sort of analysis could be done for all the letters of the Old Hebrew, Phoenician, and Aramaic scripts. In any case, the point is that the Old Hebrew script was a distinct national script, differing from the Phoenician and Aramaic series and reflecting independent developments. There must have been, I would argue, a mechanism for the development, use, and retention of a distinct Old Hebrew national script.

Of course, Jamieson-Drake has argued that the alphabetic script is "simple enough that functional knowledge of it could be passed on from one person to another in a comparatively short time." He states further that "schools would hardly have been necessary, unless other skills that demanded an educational setting were being taught alongside literacy" (Jamieson-Drake 1991: 154). To be sure, many biblical scholars have concurred with this sort of assessment. However, in point of fact, the Old Hebrew epigraphic record attests not to some "functional knowledge" of the Old Hebrew script, but to a sophisticated and consistent production of letter morphology and stance considered standard during specific horizons. Moreover, the Old Hebrew script also reflects the fact that Old Hebrew scribes adhered to certain strict curricular conventions about the relative positions of certain sequential letters (e.g., *samek-pe*). Furthermore, the Old Hebrew scribes were such meticulous tradents that the Old Hebrew script can be readily distinguished from Phoenician and Aramaic as a distinct national script. Of necessity, it must be affirmed that the lion's share of the Old Hebrew

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[35] See Rollston (1999) for a quantitative discussion of the evolution of the top-right angle through time. Note that a rare early Old Hebrew *bet* might have an upright stance, a preservation especially within the formal cursive.

epigraphic record does not reflect "functional knowledge" of the script. It reflects the sophisticated knowledge of trained professionals.[36]

OLD HEBREW ORTHOGRAPHY

The Old Hebrew script was a distinct script series, with diagnostic differences distinguishing it from Phoenician and Aramaic, and reflecting both diachronic development and synchronic consistency. Similarly, the orthographic practices used for Old Hebrew differ from those of Phoenician. Moreover, the development of certain orthographic conventions in Old Hebrew (namely, internal *matres lectionis*) occurred later in Old Hebrew than in Aramaic.[37] In addition, the orthographic conventions employed within the Old Hebrew writing system also reflect diachronic development and synchronic consistency.

Comparitive Orthographic Analysis

Some have argued that a primary reason for the consistency of the Old Hebrew orthography is that there were no real orthographic options for the Old Hebrew writing system. For example, Weeks has argued that "the general uniformity of orthography is explained simply by the nature of the script: it is really quite hard to come up with alternative spellings of a word when the alphabet offers little or no choice of characters to represent a given sound." He goes on to affirm that "it was only with the widespread use of the more ambiguous vowel letters, in a later period, that great variation was able to occur" (Weeks 1994: 152). Similarly, Crenshaw states that "the Hebrew alphabet offers little option in spelling, at least until the use of vowel letters" (Crenshaw

1998: 106). However, *matres lectionis* (i.e., "vowel letters") occur, not simply "in a later period," but in the early Old Hebrew inscriptions.[38] Thus, final *matres lectionis* occur in Old Hebrew inscriptions from the time of the early Old Hebrew inscriptions (late ninth and early eighth centuries), and this usage persists for the succeeding chronological horizons of the Iron Age. Moreover, internal *matres lectionis* begin to be used in an incipient fashion during the late eighth century and very early seventh century in Judah, and they become reasonably common in the late seventh and early sixth centuries. Furthermore, comparative analysis of the orthography of Iron Age Phoenician, Old Hebrew, and Aramaic serves to elucidate the complexities and nuances of the orthographies of these writing systems (including diachronic development) and also to demonstrate that "alternative spellings" were indeed real options for Iron Age Levantine writers employing the same 22-letter alphabet.

(1) Final long /ī/: Old Hebrew inscriptions consistently use *yod* as a *mater lectionis* to mark final long /ī/.[39] For example, /kī/ ("for," "since," "because") is spelled *ky* during the eighth century (e.g., Siloam Tunnel 3), the seventh century (Mh1.4), and the early sixth century (Lh2.4; 3.6, 8); similarly, /ʾadōnī/ ("my lord") is written *ʾdny* (Kuntillet ʿAjrud; Ad18.1; Lh2.1) and /mī/ ("who") is written *my* (Lh2.3 et passim). However, Iron Age Phoenician orthography does not mark final long /ī/. For this reason, for example, /kī/ is spelled *k* (e.g., Yehimilk line 6) without a *mater lectionis* for the final long /ī/. Within Old Aramaic and Official Aramaic, final long /ī/ is marked with a *yod* functioning as a *mater lectionis*. For example, /kī/ is consistently written *ky* (Zakur Stele A.13; Ahiqar passim), and /hawtibanî/ is

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[36] Some Old Hebrew inscriptions of modest quality have been excavated (e.g., Ad99), but these are rare exceptions, not the norm.

[37] For the field of epigraphic Northwest Semitic phonology (including orthography), the following works are among those of greatest import: Cross and Freedman (1952; 1975), Zevit (1980), Garr (1985), Andersen and Freedman (1992), Gogel (1998), and Andersen (1999). Although recent discoveries of Old Hebrew have refined the work of Cross and Freedman, their construct regarding *matres lectionis* and dipthongs continues to be most authoritative, along with the more recent contributions of Garr and Andersen. Bange's work (1971) on orthography cannot be considered reliable for a number of reasons, especially because of his rejection of the comparative Semitic data.

[38] It is regrettable that Weeks (1994) does not provide some indication as to what he means with the words "later period." Nonetheless, because we have final *matres lectionis* attested for early Old Hebrew inscriptions and because we have the use of internal *matres lectionis* for more than a century before the fall of Jerusalem in 587, the statement of Weeks is not accurate, regardless of how he defines "later period." Note that Schniedewind has erred in a similar fashion, stating that "vowel letters were already in limited use in Hebrew by the mid-seventh century" (Schniedewind 2004: 226). That is, vowel letters had actually been in use for well over a century prior to the mid-seventh century.

[39] For some of the vocalizations (e.g., in verbs) in this section of the article, there could be scholarly debate. I should be pleased to defend my vocalizations, should the need arise.

spelled *hwšbny* (Bar Rakkib line 5).[40] Ultimately, it is readily apparent that there are orthographic differences between Phoenician orthographic conventions and those of Iron Age Aramaic and Hebrew: that is, there were orthographic "alternatives."

(2) Final long /ū/. The third common plural perfect verbal form of Old Hebrew had a final /ū/, and this is represented in Hebrew orthography by a *waw*. For example, Old Hebrew /hikkū/ ("they struck") is written *hkw* (Siloam Tunnel, line 4), with the *waw* representing the final /ū/, and /wayaˤlehū/ ("and he brought him up") was written *wyˤlhw* (Lh4.6, 7) with the final *waw* a *mater lectionis* for /ū/.[41] However, the same verbal form (i.e., 3rd plural) in Iron Age Phoenician is spelled without the final long vowel represented in the orthography. Therefore, Phoenician /paˤalū/ ("they made") is written *pˤl* (Kilamuwa, line 5), without the use of *waw* to represent the final /ū/. Within Iron Age Aramaic, however, final long /ū/ was marked with a *waw* functioning as a *mater lectionis*. For example, /waśāmū/ "and they set" is written *wśmw* (Zakur Stele, A:9), with the *waw* representing the final /ū/, and "they coveted" is written *htnʾbw* (Bar Rakkib, line 14) with *waw* a *mater lectionis* signifying /ū/. Again, the comparative Northwest Semitic epigraphic evidence demonstrates that there were orthographic "alternatives" for those using the same 22-letter alphabet.

(3) Iron Age epigraphic Hebrew final long /ō/ was marked by a *he mater*.[42] For example, /ʾašēratō/ "his ˤasherah" is spelled *ʾšrth*, with the *he* serving as a *mater lectionis* for /ō/ (Kuntillet ˤAjrud; Khirbet el-Qom), /ˤabdō/ "his servant" is spelled *ˤbdh*, with *he* marking /ō/ (Mh1.2; Lh2.5), and "he has sent it" /šalaḥō/ is written *šlḥh* (Lh3:21).[43] Final /ā/ was also

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[40] Note that in Old Hebrew, the 1.c.s/ perfect is (normally) written -*ty* (e.g., Lh3.12; 4.3; 12:4; Mh1.11; Ad88.1). The *yod* of the 1.c.s. can be restored (Mh1.8; so Cross 1962a; pace Gogel 1998: 82). Ad16.2–3 has been argued to have no *yod* (Gogel 1998: 82), but my analysis of the best original negative reveals that this inscription is so faded at this point that several readings are possible. The same is the case for the alleged readings of Ad40.3 and Ad40.10. However, at Kuntillet ˤAjrud *brkt ʾtkm* ("I bless you") is attested, and so in this case the *yod* was not written. P. Kyle McCarter has noted (personal communication) that rarely in the MT the *yod* is absent (cf. Ps 140:13; Job 42:2; 1 Kgs 8:48). The cumulative data supports Andersen's suggestion (1999) that the vowel of this suffix might have been lost (or shortened) at times in speech. Ultimately, it could be argued that the epigraphic evidence and the MT evidence align quite nicely.

[41] Zevit (1980) has argued that *ʾalep* in the word /lō/ (e.g., Mh1.14) is a *mater lectionis* for /ō/. However, because *lʾ* is the spelling of this word not only in Hebrew, but also in Aramaic, I consider *ʾalep* in this word to be etymological in certain branches of the Northwest Semitic languages, not a *mater lectionis* for /ō/. Note that Andersen and Freedman (1992: 89) have suggested that the negatives *ʾl* and *lʾ* (in Hebrew and Aramaic) could have derived from the same root, namely, *l*, with an affixed consonantal *ʾalep*. I concur (cf. also Andersen 1999: 5–7).

[42] Within the Old Hebrew corpus, the 2.m.s. perfect is written consistently as -*t* (Ad2.5–6; 2.7–8; 3.5; 3.8; 17.3–4; 40.5; Mh1.14), while the 2.m.s. perfect plus the pronominal suffix is written as -*th* (Lh2.6; 3.8; 5.4 (faded); Ad7.5–6; 40.9). Schniedewind (2000: 160) argues that within Lachish 3, the words *šlḥth* and *ydˤth* (Lh3.6 and 3.8) are both to be understood as 2.m.s. perfect, with the *he* as a *mater lectionis* for /ā/ (and thus not a marker of the 3.m.s. pronominal suffix /ō/). Schniedewind translates these two verbs as "you sent" and "you know" and suggests that this longer spelling (i.e., with *he* marking /ā/) constitutes a "linguistic idiosyncrasy." However, Cross (1985: 43–46) considers the *he* of both of these verbs to be the *mater* for the 3.m.s. pronominal suffix /ō/, that is, "it." Schniedewind objects to this, arguing that it may be possible to render *šlḥth* as "you sent it" (with the suffix serving as a resumptive pronoun), but he does not consider it possible to consider *ydˤth* as "you did (not) understand it" (with the suffix "it" referring to a previous letter). He reasons that √*ydˤ* ("to know, understand") must refer to a person, based on its uage in the Hebrew Bible (and thus cannot refer to a previous missive). However, I would argue that within the Hebrew Bible √*ydˤ* has a relatively broad semantic domain, including knowledge of how to do things (e.g., Amos 3:10; Jer 1:6) as well as having a knowledge of something such as the "sea" (e.g., 1 Kgs 9:27). Therefore, there can be no semantic objection to this being a pronominal suffix because it does not refer to a person, pace Schniedewind. Furthermore, *šlḥh* ("he has sent it," that is, with the 3.m.s. pronominal suffix on a finite verb) does occur unambiguously in this letter (Lh3.21), thus fortifying even more the argument for *he* of *šlḥth* and *ydˤth* being the pronominal suffix /ō/.

Gogel (1998: 83–87) assumes that Lh3.8–9 *ʾmr ʾdny lʾ ydˤth qrʾ spr* must be rendered as follows: "My lord said, 'Don't you know how to read a letter?'" and then she states that "it is not likely that the *he* ending on *ydˤth*, grammatically, syntactically, or stylistically would be a pronominal suffix ('You know it')." However, she fails to consider the fact that *spr* is also the spelling of "scribe" and that *qrʾ* often means "to summon." That is, this component can (and I would argue should) be read "My lord said, 'You *did not* understand it. Call a scribe!'" In essence, Hoshaiah's superior officer (Yaʾosh) had commanded him (Hoshaiah), in a previous letter, to summon a scribe so that he could better understand the missives. Based on the fact that in the succeeding lines of this letter Hoshaiah tells Yaʾosh, in essence, that "even if a scribe might come . . . I would not have summoned him and I would not pay him," this interpretation (argued by Cross 1985: 43–46) becomes compelling. Again, even with regard to the spelling of the 2.m.s. (with and without the pronominal suffix /ō/), the Old Hebrew scribes were consistent.

[43] It has been posited that *waw* is sometimes a *mater lectionis* for ō. For example, Naveh read *lw* (to him) in the Khirbet Beit Lei

marked with *he*.[44] For example, /ʿidā/ (PN) (Kuntillet ʿAjrud) is written ʿdh. /ʾammā/ "cubit" (Siloam Tunnel, lines 5 and 6) is written ʾmh, /šiššā/ "six" is written ššh (Ad7.4), and /ʿaśā/ "he did" is written ʿśh (Lh4.3). In addition, final long /ē/ was also marked by a *he* as a *mater lectionis*. For example, /wa-zē/ "and this" is spelled wzh (Siloam Tunnel, line 1), /yahwē/ is spelled yhwh (Kuntillet ʿAjrud; Ad18.9), and /hinnē/ "behold" (Lh6.5) is spelled hnh. Note that the same basic orthography is attested for Aramaic. However, Phoenician orthography does not employ *he* to mark these final vowels. Again, there were orthographic "alternatives."

(4) Iron Age Phoenician did not employ internal *matres lectionis*.[45] However, Iron Age Aramaic did use internal *matres lectionis*. For example, within the Hadad Statue Inscription (from the early to mid-eighth century), /kpīr/ "village" (line 10) is written with a *yod* as a *mater lectionis* for /ī/, and in the Panammu Inscription (from the mid-eighth century) /mūkrū/ is written mwkrw (line 10). The Bar Rakkib Inscription (from the mid-eighth century) employs internal *matres lectionis* in two proper names: tgltplysr (line 1.6) with *yod* functioning as a *mater lectionis* for /ī/, and ʿšwr (line 1.9) with *waw* functioning as a *mater lectionis* for /ū/. Most significantly, the Tell Fakhariyeh Statue Inscription (from the mid-ninth century) employs internal *matres lectionis* extensively, with the *waw* of the word /gwgl/ "canal inspector" (line 2) serving as a *mater lectionis* for /ū/ and the *yod* of prys (line 19) "a *parīs*" (unit of dry measure) a *mater lectionis* for /ī/.[46]

For Old Hebrew, there is no evidence for the use of internal *matres lectionis* during the lion's share of the eighth century.[47] For example, during the eighth century, /ū/ is not written with a *mater lectionis*. Thus, /barūk/ "blessed" (i.e., Gp participle) is written brk (Kuntillet ʿAjrud; Khirbet el-Qom); /raḥūṣ/ "refined" (i.e., a Gp participle) is written rḥṣ (Reisner Samaria Ostraca, passim).[48] Moreover, during the terminal period of the eighth century, Hebrew /ʾīš/ ("man") is still written ʾš (e.g., Siloam Tunnel, line 2 twice and line 4), without a *mater lectionis* for the

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inscriptions (Naveh 1963: 84). Following Naveh's preliminary reading, Zevit (1980: 30–31) argues that this constitutes the usage of *w* as a *mater lectionis* for *ō*. However, Cross (1970: 299–306) has demonstrated that Naveh's preliminary reading of this (poorly executed and abraded) inscription was erroneous, with *lw* not actually occurring in this text. Regarding ʾnšw (Lh3.18), I would follow Cross and Freedman (1952: 54) and argue that the *waw* is consonantal and that the vocalization is arguably /ʾanašaw/ "his men." For the orthography of the form rʿw (Siloam Tunnel, line 2) "his fellow," see Cross and Freedman (1952: 50). Barkay (1986: 30:35) had argued that šlwm was attested in Ketef Hinnom (2.11–12), and Gogel (1998: 68) cautiously suggested that this might be a case of *waw* for /ō/, but new images have demonstrated that there is no *waw* (Barkay et al. 2004: 53). Regarding Ketef Hinnom, it should also be noted that within the republication (dating these amulets to the "late preexilic" period), it is stated that "the attestations of final *hê* as the suffix for singular nouns . . . are all in inscriptions that considerably predate the Ketef Hinnom inscriptions," and then there is reference to Kuntillet ʿAjrud, Khirbet el-Qom, and the Royal Steward Inscription. Note, however, that this usage definitely persists into the late preexilic period (pace Barkay et al. 2004: 54), as the evidence, for example, from Lachish and Mesad Hashavyahu, demonstrates. Moreover, although the authors of the republication read *bw* (Ketef Hinnom 1.11) "in him," I am not at all confident that this portion of this fragmentary text should be understood this way. The *bet* and *waw* do appear to be present, but these are arguably the end of a word, not simply a preposition with a pronominal suffix. Ultimately, I would argue that there is no decisive evidence that in Iron Age Hebrew *waw* served as a *mater lectionis* for /ō/. Certainly this development would later occur in Hebrew (e.g., Qumran), but this development is not yet attested in a clear context for Old Hebrew.

[44] Following Cross and Freedman (1952), I consider hypocoristic ʾalep to be a consonant, not a vowel letter (pace Gogel 1998: 61). For a discussion of ʾalep as a vowel letter in Aramaic, see the article by Andersen and Freedman (1992).

[45] Zevit (1980: 4) has argued that there are "sporadic indications" that some *matres lectionis* were employed after the ninth century. He argues that ʾalep of the word rʾš ("head") is a *mater* for /ō/. However, the fact of the matter is that ʾalep is etymological in this word. Compare Hebrew rōʾš; Aramaic rēʾš; Arabic reʾš; Old

South Arabic and Ethiopic raʾsun. In short, ʾalep is part of the triliteral root, not a *mater lectionis*. Zevit's second example is from an "Arslan Tash Incantation Plaque" that derived from the antiquities market (cf. Cross and Saley 1970; Pardee 1998).

[46] For the *editio princeps* of Tell Fakhariyeh, see Abou-Assaf, Bordreuil, and Millard (1982). See especially S. Kaufman (1982: 155–57, esp. n. 49) for Aramaic orthography in certain dialects. See also Cross's statement that the full use of internal *matres lectionis* "reflects a time of experimentation at the beginning of the use of vowel letters" (Cross 1995: 401). I would concur with Cross and would suggest that the variation that Millard has astutely noted is a window on the process of the development of internal *matres lectionis* in Aramaic (Millard 1991).

[47] Gogel (1998: 62–63) refers to several possible examples of internal *matres lectionis* during the early to mid-eighth century; however, I would argue that *waw* and *yod* in these words are consonantal, often very clearly so.

[48] Understanding both of these as Gp is the most tenable and the most common. Especially for palaeographic reasons, I would date the inscriptions from Khirbet el-Qom to the eighth century. Of course, an ancillary benefit of this dating is the fact that it eliminates some of the tension to which Millard has referred (1991). As for the inscriptions from Khirbet Beit Lei, I would suggest that these are not the product of a trained scribe. Moreover, I believe that it is possible to date these to the eighth century.

long /ī/. Note that the Judaean stamped jar handles (very late eighth century or very early seventh century) provide a window on the incipient usage of the internal *matres lectionis*, with the place-name "Ziph" written *zyp* and *zp*, that is, both with and without the internal *matres lectionis*. Moreover, the Royal Steward Inscription (late eighth century or very early seventh century) employs an internal *mater lectionis*—namely, /ʾarūr/ (Gp participle) is written *ʾrwr* (line 2). During the succeeding decades, Hebrew orthography continued to develop, and by the second half of the seventh century and early sixth century, Old Hebrew began to use internal *matres lectionis* more frequently; hence /ʾīš/ ("man") is written *ʾyš* (Ad40.8; Lh3.9,10), /ʿīr/ is written *ʿyr* (e.g., Lh4.7; Ad24.17), and /sūs/ is written *sws* (Ad111.5). Some variation continues during this period of development and usage of internal *matres lectionis*. For example, note the spelling of the personal name /ʾaḥīqām/, namely, *ʾḥyqm* (Ad31.5), with the *yod mater* and *ʾḥqm* (Horvat ʿUza 1.1), without the *yod* as a *mater*. Both of these ostraca come from the same basic chronological horizon; therefore, such variation is a window on the continuing process of development of internal *matres lectionis* in Hebrew (cf. also *ʾḥk* [Ad16.1]).[49] Ultimately, this process of orthographic development will continue, as reflected in the very full orthography of the Qumran corpus (Cross 1955; Tov 2004: 337–43). In sum, again, there are orthographic differences between Old Hebrew and Phoenician. Moreover, there are also differences between Old Hebrew and Aramaic, with Aramaic beginning to employ *matres lectionis* prior to their use

in Old Hebrew.[50] That is, in terms of conventions and chronology, there were options.

Diachonic Development and Synchronic Consistency

Weeks has conceded that if there were "consistency" in the Old Hebrew orthographic system, there would be some "force in this argument" that "schooling must be hypothesized." However, he states that "the use of *matres lectionis* is far from consistent" (Weeks 1994: 151–52). Based on the extant epigraphic evidence, I would argue that the Old Hebrew epigraphic data reflect synchronic consistency and diachronic development. The Old Hebrew orthographic system can be synthesized as follows: (1) During the ninth and early eighth centuries, Hebrew orthography employed a system of final *matres lectionis*: final ī was represented by *yod*; final /ū/ was represented by *waw*; final /ā/ was represented by *he*; final /ē/ was represented by *he*; final /ō/ was represented by *he*. There is a general absence of the internal *matres lectionis* throughout the lion's share of the eighth century. (2) During the terminal period of the eighth century and the beginning of the seventh century, final *matres lectionis* continued to be used, with final ī represented by *yod,* final /ū/ represented by *waw*, final /ā/ represented by *he*, final /ē/ represented by *he*, and final /ō/ represented by *he*. In addition, there is Old Hebrew evidence for incipient usage of internal *matres lectionis*, with *waw* serving as a *mater lectionis* for internal /ū/, and *yod* serving as a *mater lectionis* for the internal /ī/. (3) During the second half of the seventh century and the beginning of the sixth century, final *matres lectionis* continued to be used, with final ī represented by *yod*, final /ū/ represented by *waw*, final /ā/ represented by *he*, final /ē/ represented by *he*, and final /ō/ represented by *he*. In addition, there is growing usage of internal *matres lectionis*, with *waw* serving as a *mater lectionis* for internal /ū/ and *yod* serving as a *mater lectionis* for the internal /ī/.[51]

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[49] Also, note that the personal name *ʾlyšb* is well preserved on several ostraca from Arad (1–8, 11, 16, 17, 18, 21, 24, 38). Three seals from Arad also contain the name (seals 105–7); however, the third seal does not have the *yod*. Based on this evidence, Zevit (1980: 24) suggests that the *yod* of this name is an internal *mater lectionis* for /ī/. I would make two notations in this connection: (1) the *yod* is a root letter (i.e., part of the root √*yšb*, with the name thus meaning "El dwells"). Therefore, I do not believe that it should necessarily be regarded as a *mater* here. (2) In addition, note that the script of seal 107 is quite poorly executed, and the engraver of this seal also neglected to write the *bet* of the word /ben/ before the patronymic. Of course, *ʾlyšb* does conclude with a *bet*, and this arguably precipitated his decision to omit the second *bet*. Nevertheless, this practice is not the norm in Old Hebrew orthography. Ultimately, because the script of this seal is so poor (reflective of either a beginning student or someone without formal training), I would be disinclined to suggest that it should be factored into any conclusions in a rigid manner.

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[50] Note that because Aramaic begins to employ final and internal *matres lectionis* prior to Old Hebrew's employment of final and internal *matres lectionis*, and because the Old Hebrew usage essentially parallels the Aramaic usage, it is tenable to argue that scribes of Old Hebrew borrowed the Aramaic system of *matres lectionis* (so Cross and Freedman 1975).

[51] It is telling that Weeks has stated that "the use of *matres lectionis* . . . shows considerable development over time" and also

Finally, I would argue that certain additional strictures regarding usage within Old Hebrew are also of some import. For example, although *he* could serve as a *mater lectionis* for final /ē/ and final /ō/, it was never used as an internal *mater lectionis* in Old Hebrew for any vowel. Moreover, although medial /ī/ and /ū/ could be marked with *yod* and *waw*, medial /ā/ was never marked with a *mater lectionis*, not even with *he*.

In sum, Phoenician, Aramaic, and Hebrew reflect different orthographies (in terms of practice or beginning period of usage); therefore, *there were orthographic options* for those using the same 22-letter alphabet. Furthermore, although there is development of orthographic conventions in Old Hebrew, there is also a *marked consistency* of usage and non-usage of final and internal *matres lectionis*. This sort of standardization is most consistent with a strong mandating mechanism.

Dialectical Differences in Old Hebrew

Two dialects of Hebrew are attested in Old Hebrew inscriptions: Northern ("Israelite") and Southern ("Judaean"). For example, within the Southern dialect (as reflected in biblical Hebrew), the word for "year" was *šnh* /šanāh/. Significantly, the Northern dialect is consistent in using *št* /šat(t)/ for "year" (Reisner Samaria Ostraca, passim). Moreover, within the Southern dialect, dipthongs do not contract.[52] However, within the Northern dialect, dipthongs do contract. Thus, within the Southern dialect, the word for "wine" is spelled *yyn* /yayn/ (Ad1.3, 9), but in the Northern dialect, the dipthong has contracted and the word is spelled *yn* /yên/ (Reisner Samaria Ostraca, passim).[53] Moreover, within the Southern dialect the dipthong *aw* has not contracted. For example, the word /ham-mawṣaʾ/ ("the source") is spelled *hmwṣ* (Siloam Tunnel, line 5), and the word /baʿawd/ ("while yet") is spelled *bʿwd* (Siloam Tunnel, line 1).[54] That is, the dipthong *aw* has not contracted.[55] Although the evidence is modest, it has been argued that this dipthong does contract in Northern Israelite.[56] To be sure, two dialects of Hebrew are reflected in the Old Hebrew epigraphic record, but random dialect variation does not occur.[57] Rather, consistency is the norm.

(with *byt*) is "anomalous" (based on the assumption that it is Northern Israelite) because the dipthong has not contracted. Note that Cross and Freedman suggest that this orthography could be a result of the fact that *byt* is here part of a place name, that is, *byt ḥrn*. Garr (1985: 38) suggests that this form "may not reflect current speech patterns but those of an earlier, nonmonophthongizing dialect." Significantly, Naveh has argued that this ostracon is not Old Hebrew, but Philistine (Naveh 1985: 16). Based on the fact that proper nouns sometimes reflect archaic spellings (e.g., historic spellings) and sometimes (especially with foreign personal names) innovations (e.g., harbinger forms) as well as the fact that this inscription may be Philistine, I am disinclined to frame it as indicative of the preservation of the dipthong in Northern Israelite.

[54]That is, I cannot concur with the suggestion of Zevit that this form should be understood as an internal *mater lectionis* (1980: 19). This is a triliteral word and *ʿayin*, *waw*, and *dalet* are all consonants; therefore, the *waw* is not serving as a vowel marker.

[55]Some might suggest that the presence of /yam/ ("day") written *ym* in epigraphic Southern Old Hebrew is indicative of the contraction of the *aw* dipthong in the Southern dialect. Based on the comparative Semitic evidence, I would reconstruct two forms (i.e., biforms) of this word in Proto-Northwest Semitic: /yam/ and /yawm/, with biblical and epigraphic Hebrew actually also attesting to both (cf. Mesad Hashavyahu). On this point, see especially the discussion of Garr (1985: 39) and Cross and Freedman (1952: 50). That is, the presence of the spelling *ym* (rather than *ywm*) is plausibly considered to reflect a biform, not a contracted vowel.

[56]Regarding the posited contraction in the place name *ḥrn*, see Cross and Freedman (1952: 48) and Garr (1985: 38), but see Naveh (1985: 16) and his suggestion that this ostracon is Philistine, not Hebrew.

[57]Weeks attempts to impugn the Old Hebrew epigraphic record with these words: "As regards orthography, there is regional variation in the representation of vowels, expressing differences in pronunciation" (Weeks 1994: 152). Because Weeks refers, in the succeeding sentences, to his assumption of the "inconsistency" of *matres lectionis* in Old Hebrew, I believe that with his reference to "orthography" and "regional variation in the representation of vowels," Weeks is referring to the differences between the contraction of diphthongs in Northern and Southern Hebrew. Of course, Weeks should have used the conventional term "phonology" in this discussion, but this is arguably a minor point. The major point is that he fails to understand that there were two dialects of ancient Hebrew and that although there were differences between these two dialects (a tautology, of course), each dialect of Hebrew was consistent. Alas, Weeks has misunderstood and misrepresented the evidence from Old Hebrew and comparative Semitics.

that "development [in Old Hebrew orthography] is hardly evidence of a static tradition of orthography" (Weeks 1994: 152). In essence, he assumes that orthographic development through time (i.e., diachronic orthographic development) is incompatible with the presence of formal, standardized education. However, descriptive and prescriptive grammarians concur that orthographic development can and does occur in living alphabetic writing systems, even though formal, standardized education is present.

[52]Zevit (1980) argues that the diphthongs have also contracted in Judaean Old Hebrew; however, none of his examples is entirely compelling. Note that even in construct, the dipthong is preserved: *byt yhwh* (Ad18.5; cf. also Ad17.2; Lh4.5). That is, regarding the contraction of dipthongs, the position of Cross and Freedman (1952) continues to be the most convincing (cf. Gogel 1998: 66).

[53]Cross and Freedman (1952: 48) refer to the orthography of the "Beth Horon Sherd" from Qasile and suggest that its orthography
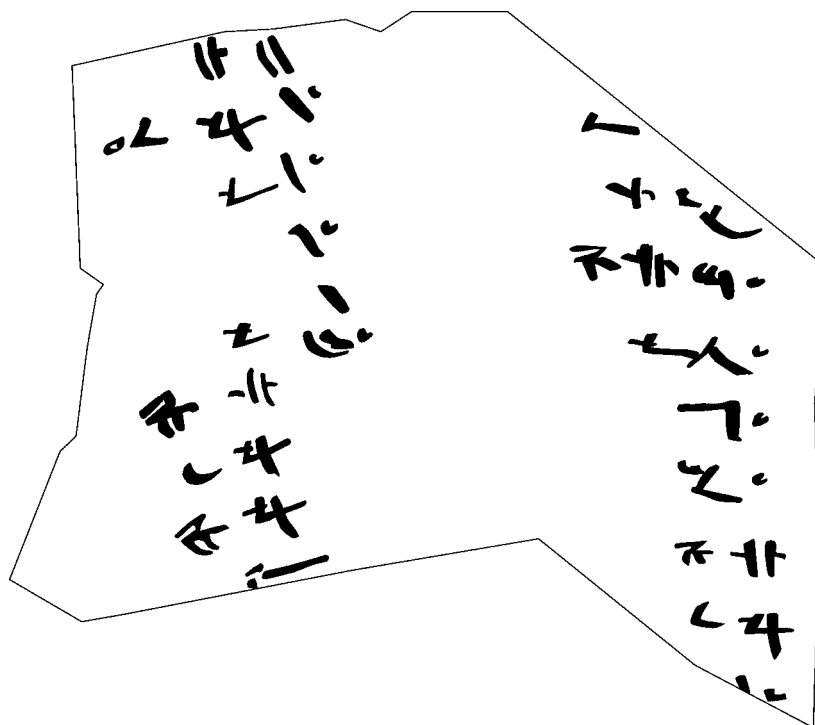
Fig. 2. Arad 34. Drawing by Christopher Rollston.

COMPLICATED SCRIBAL CONVENTIONS: HIERATIC NUMERALS

Egyptian hieratic numerals are attested at several different Iron Age Israelite and Judaean sites, spanning from the ninth to the early sixth century.[58] For example, hieratic numerals and Old Hebrew script are both present on an ostracon from Arad XI (Ad76). Moreover, the Reisner Samaria Ostraca frequently use hieratic numerals (e.g., Sa22, 27, 28, 34, 58, 61). Hieratic numerals are also attested for Arad IX (e.g., Ad60; 65) and Arad VIII (e.g., Ad42; cf. Ad46). Several of the Arad VII–VI Hebrew ostraca use hieratic numerals and symbols (e.g., Ad2; cf. Ad22; 31; 33), and one ostracon consists solely of hieratic numerals (*Ad34; see fig. 2). Hieratic numerals were

also found at Lachish (e.g., Lachish weights) and also arguably at Mesad Hashavyahu (cf. Mh3; 4). The use of hieratic numerals at Kadesh-Barnea is particularly significant, because among the Old Hebrew ostraca were several with hieratic numerals, including one which was an ostracon that originally consisted of hieratic numerical data spanning, in numeric order, from one to ten thousand (Lemaire and Vernus 1980; 1983). This ostracon also contained at least the beginning of another similar listing of the numbers. Based on the epigraphic evidence, it is demonstrable that Israelite scribes during the course of the ninth through sixth centuries, at disparate sites in Israel and Judah, were capable of using a complicated, (originally) foreign numeric system.[59] Because of the complexity of the hieratic system, developing proficiency in its writing would not have been facile.

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[58] For discussion of hieratic numerals in Old Hebrew, see especially Aharoni (1966); Lemaire and Vernus (1978; 1980; 1983); and Kletter (1991; 1998). For treatment of hieratic numerals, the works of several Egyptologists are most helpful, especially Pestman (1994).

[59] For several reasons, I would argue that those penning the hieratic numerals were Israelite scribes, not Egyptian. After all, the hieratic numerals are normally part of a document that contains Old Hebrew writing, not Egyptian.

For this reason, I believe that it is convincing to argue that learning hieratic numerals reflects formal, standardized scribal training.

COMPLEMENTARY NOTATIONS

Abecedaries and Exercise Tablets

Of course, abecedaries have been discovered at various sites in Israel and Judah, as well as in various other parts of the Levant (including Ugarit). It has often been argued that abecedaries are the product of an educational context. For example, Puech (1988: 189) has affirmed that "Il ne fait aucun doute que la plupart des abecedaries relevant de l'apprentissage de l'art d'écrire." However, Haran (1988: 85–91) has argued that there is no necessary connection between many of the abecedaries and schools (cf. also Weeks 1994: 150; Crenshaw 1998: 101–7). To be sure, Lemaire has drawn some broad conclusions from the presence of abecedaries at various sites (i.e., the presence of an abecedary at a site was indicative of a school at that site), and he has also considered certain brief fragmentary inscriptions (e.g., *qr* at Aroer) to be probable abecedaries (Lemaire 1981: 7–33), even though these could be read as word fragments. For these reasons, he was subjected to criticism. Of course, some have actually suggested that abecedaries were perceived as having some sort of mantic function in ancient societies and were not educational (Weeks 1994: 150–51). However, I am not convinced that all extant abecedaries functioned as talismans or were perceived as having mantic functions. Naturally, though, I would not argue that the presence of an abecedary at a site must necessarily be indicative of a school at the site (e.g., it might be indicative of the presence of a student at a site). Ultimately, I would simply affirm that it would be difficult to suggest that none of the abecedaries is to be associated with curricular activities.

General Contents: Epistolary Documents

Within the corpus of Old Hebrew inscriptions are a number of letters (Pardee 1982; Lindenberger 2003). These documents will normally begin with some reference to the recipient and often contain some sort of greeting (e.g., "May Yahweh cause my lord to hear a message of peace and good things"; cf. Lh2; 3; 4; 5; 6; Ad16; 21; 40). Sometimes the name of the sender is also provided (e.g., Lh3; Ad16; 21;

40), but this is not a dominant component of Old Hebrew letters. Normally, Old Hebrew letters reflect a clear transition from the traditional greetings to the body of the letter. The word *w*ʿ*t* ("and now") is a very common mode of transition, although sometimes different transitional formulae can be used (Pardee 1982: 149–50). After the transitional component of the letter, the body of the letter was penned. Closing formulae (e.g., signature, list of gods, and witnesses) are not a traditional component of Old Hebrew letters (Pardee 1982: 155). It would not be tenable to argue that learning the basic features of Old Hebrew epistolary formulae is a complex procedure; however, the presence of a certain common structure within the epistolary corpus cannot be dismissed as being of no curricular import.

CONCLUSIONS

Old Hebrew scribes produced inscriptions that reflected meticulousness with regard to the morphology and stance (and ductus as well). In addition, they produced inscriptions that reflect assiduousness with regard to the precise conventional spatial relationships of letters (e.g., ʿ*ayin* and *pe*). The synchronic consistency is striking, especially in light of the fact that diachronic development is a feature of the Old Hebrew script. Also of significance is the fact that the script of Old Hebrew inscriptions can be distinguished from the Phoenician and Aramaic script series: that is, there are Old Hebrew script isographs. In sum, there is a national Old Hebrew script; it is standardized and reflects synchronic consistency, in the face of diachronic development; and, in addition, it differs markedly from the national Phoenician script and the national Aramaic script. Ultimately, I would contend that the precision, meticulousness, and consistency of the Old Hebrew script (and its marked and consistent differences with the Phoenician and Aramaic scripts) are features that reflect formal, standardized scribal education. Such features are certainly not consistent with an absence of formal, standardized education. Furthermore, the orthographic conventions of Old Hebrew also reflect synchronic consistency (and diachronic development). Of course, some have supposed that the reason for orthographic consistency is that the 22-letter alphabet permitted no real orthographic options. However, comparative orthographic analysis (i.e., of Phoenician, Aramaic, and Old Hebrew) has demonstrated that there were indeed orthographic

options; thus the consistency of Old Hebrew orthography cannot be dismissed. Rather, there must have been a mechanism present that accounts for the orthographic consistency: namely, formal standardized education. In addition, numerous Old Hebrew inscriptions from the ninth through sixth centuries B.C.E. (and from Israelite and Judaean sites) contain hieratic numerals, a complicated numeric system. Such things were, I would argue, fundamental curricular foci in ancient Israel. Of course, some have argued that becoming proficient in an alphabetic writing system is facile, and so no formal education would be required. However, modern studies of the time required for proficiency in an alphabetic writing system demonstrate that learning an alphabetic system is not facile. Rather, substantial time is required even for the most gifted students. It is simply not feasible to attempt to account for the Old Hebrew epigraphic data without positing some sort of formal, standardized education. After all, the production of formal, standardized, and sophisticated epigraphs necessitates the presence of formally trained scribes.[60]

Finally, to complement this discussion, there should be some reference to the aegis that arguably fostered and sustained the formal, standardized education in the Old Hebrew writing system. That is, because of the nature and consistency of the Old Hebrew epigraphic evidence, it is cogent to posit that there must have been a significant and powerful mechanism that fostered and sustained education in Old Hebrew writing. In my opinion, the most reasonable position is that "the state" was the primary aegis for scribal education in Iron II Israel (cf. Sanders 2004). After all, the royal administration was a powerful center for elite activity, and the tasks associated with the palace (and temple) would require literate personnel. Moreover, the majority of the Old Hebrew epigraphs are administrative (and military) in nature. That is, economic dockets and military correspondence are among the most common. Some might counter that my supposition that scribal education was under the aegis of the royal administration would necessitate the presence of an excavated monumental building (or component thereof) which could plausibly be identified as such. This does not necessarily follow, however. Note, for example, that Assyriologists have suggested that even in Mesopotamia, much schooling occurred in domestic contexts (e.g., Tinney 1998; cf. George 2005). Moreover, Old Hebrew epigraphic materials, some of which contain the names of high officials, have been discovered in contexts that are arguably domestic (e.g., the City of David Bullae).[61] One should, therefore, be careful before positing rigidly the necessity of some sort of monumental architectural feature which is discernible as the locus for Israelite scribal education. My own suspicion is that scribal education in Israel could have occurred in a variety of contexts, monumental and non-monumental (but always with trained scribal personnel at the helm). To be sure, the locus and aegis will continue to be matters of debate (and I intend to address these issues in subsequent publications). However, the point of this article is to focus on epigraphic evidence and the fact that there is no tenable manner of accounting for the Old Hebrew epigraphic evidence without positing some kind of formal, standardized education for scribal elites, regardless of the precise locus and aegis. Ad hoc, nonstandardized education would perforce have yielded substantial variations in the Old Hebrew epigraphic evidence, and that is simply not the way that the Old Hebrew evidence patterns.

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[60] Note that I am not denying that there could have been "scribal families." Nor am I denying that there could have been "scribal guilds." Indeed, these are subjects that I deal with at some length (Rollston in press), but at some level it becomes an issue of semantics (but cf. Crenshaw 1998: 106, 112). The main point is that scribal elites educated scribal elites in ancient Israel.

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[61] See especially the bullae from the City of David, discussed in Shoham (1994). Note especially the presence of the names of certain known Judaean officials (e.g., Gemaryahu ben Shaphan and ʿAzaryahu ben Ḥilqiyahu).

ACKNOWLEDGMENTS

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