NEW INSIGHTS FROM OLD WINE PRESSES

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The classic Mediterranean agricultural triad, already established in the third millennium B.C., consists of the raising of grain crops, sheep and goats, and horticulture (primarily olives and grapes: Stager 1976, 12-13). This article first summarizes what is known from biblical and extra-biblical sources concerning grape/wine production in Iron Age Israel, and then presents and analyses new data relating to this industry from three (until now) unrecognized wine presses excavated at Tell en-Nasbeh.

BIBLICAL WINE PRODUCTION

In the Iron Age a farmer would make a wine press by carving an area of the bedrock to create a flat surface surrounded by short walls. The flattened surface was for treading and the walls kept the grape juice within the press. This construction technique was successful largely because of the nature of the bedrock involved. Cenomanian limestone and Senonian chalk are the dominant bedrock materials of the central highlands (Orni and Efrat 1964, 51). These are both malleable to tooling and impermeable provided that there are no fractures present. Grape pressing was most often done outside in the field along with other agricultural chores, such as olive-oil pressing and grain threshing. Locating the press within or near the vineyard meant that harvest and wine production could occur at the same time and that grape transport was minimal. Grape skins are delicate when ripe, so locating the press near the picking minimized fruit damage (Zorn 1993, 1, 230). A concomitant harvest and wine production also maximized the labour force and enhanced social cohesion through hard work and celebration. It also provided an added security measure as the presence of workers thwarted intruders.

To judge from biblical descriptions of the grape harvest and archaeological remains of presses, ancient Israel shared in the tradition of grape pressing by foot. A screw weight press was developed in the Hellenistic or Roman period, in which wooden or stone weights were screwed down onto a cylinder containing grapes (Broshi 1984, 23; Dar 1986, 1, 150). Examples of the screw press have been unearthed in Israel from the Byzantine period (Frankel 1993, 106-18; Roll and Ayalon 1981, 111-25). However, even the screw press of these later periods probably only supplemented foot treading, as they were situated in the middle of large pressing floors (Saller and Testa 1961, 38-40). In the Iron Age period grape pressing was done exclusively by foot (see below). If there were bag presses or wooden presses, they neither survive in the archaeological record nor are apparent in the literary (i.e. biblical and epigraphic) sources (Darby et al. 1977, II, 557; Forbes 1955, 110).

There are three biblical terms for 'wine press': yeqeb, gat, and parah. Yeqeb is the most frequent, occurring sixteen times; gat is used five times. It occurs also in place-names, such as the Philistine city of Gath (e.g. 1 Samuel 5:8; 7:14), Gath-Habeph (2 Kings 14:25; cf. Joshua 19:13), and Gath-Rimon (Joshua 19:45, 21:24-25). Four of the five uses of gat occur in exilic and post-exilic texts (Lamentations 1:15; Nehemiah 13:15; Isaiah 63:2; Joel 3:13). In addition, in these four of five uses, the verb darak, 'tread' accompanies gat. The fifth use of gat occurs in Judg. 6:11, where Gideon is beating out wheat in the wine press. What all five uses of gat have in common is that an agricultural process is described as taking place in the press. The third term, parah, is used only twice, both times in post-exilic texts (Isaiah 63:3 and Haggai 2:16).
The range of uses differs somewhat for yeqeb. Yeqeb is used in both pre-exilic and later texts, but in its sixteen uses the agricultural process, treading, occurs only three times (Isaiah 16.10; Jeremiah 48.33; Job 24.11). In eleven of its uses, the product or yield from a wine press is noted with yeqeb. That is, wine is either mentioned (Hosea 9.2; Jeremiah 48.33; Isaiah 16.10) or somehow implied in the description (e.g., a thirst in Job 24.11; an overflow in Proverbs 3.10 and Joel 3.13). In these eleven cases, then, the press is described in terms of the product it yields, rather than the agricultural process involved (as it was for gat). The difference, it seems, is one of viewpoint towards the press, i.e., whether its function or consequent bounty is highlighted.

Darak is the verb for grape pressing in the Bible. It is used as a transitive verb with grapes in Judges 9.27, Jeremiah 25.30, Amos 9.13 and Micah 6.15, and in association with wine presses in Isaiah 16.10, 63.2–3, Jeremiah 48.33, Lamentations 1.15 and Job 24.11. Foot pressing, then, is the biblically attested Israelite practice for wine production and no other means of pressing are mentioned.

Since darak, 'tread', is used so often with gat, it is reasonable to suggest that the treading floor is most likely to be meant. This is probable as well for the fifth reference, Judges 6.11, since the flat surface of a wine press could serve as a makeshift threshing floor in times of duress. Since the product of the wine press, either as liquid or as offering, is stressed in eleven of sixteen uses of yeqeb, I suggest that the term signifies the installation in general. In other words, gat is best translated 'treading floor', while yeqeb denotes the more general term, 'wine press'.

The splattering and staining of grape-treading (Isaiah 63.2–3) indicates both an occupational inconvenience of the vintners and that the wine is dark. When Yahweh treads the Edomites in Isaiah 63.3, 6, the resulting juice that stains his clothes is red (vv. 1–2). In Genesis 49.11 a colour approximating that of blood stains Judah as he washes his garments in damanawin, the 'blood of grapes'. With outdoor grape-pressing some of this messiness was contained. Treaders could wash their feet and garment edges from nearby cisterns or jars of water or oil (Ahlström 1978, 44) before returning to their dwellings.

Singing and dancing were probably part of the grape-treading festivities in ancient Israel (Jeremiah 48.33; Isaiah 16.10; Judges 21.21; Jeremiah 31.13). The vulnerability of the fruit and the anticipation for what it yielded, viz., wine that would cheer both gods and humans (Judges 9.13), undoubtedly lent a tense, expectant mood to the Israelite grape harvest.

Wine production was a fairly simple process that required only two elements: grapes and yeast. The yeasts convert the sugar in the grape juice into alcohol (Unwin 1991, 46). Since these elements occurred naturally together, the technological contribution to the process was minimal, merely that it break the grapes' skin. Fermentation could have occurred in the press itself, or in jars. Given the heat and long hours it would take to tread grapes, fermentation probably began in the treading floor itself. Within six to twelve hours, fermentation reached its peak, and then tapered into a slower process lasting two to five days. Fermentation is accomplished in any suitable container where the must takes up only one half to three-quarters of its capacity. Room must be left to allow for the considerable volume of carbon dioxide produced.

The juice or wine would then have been transferred to the house for storage, either in jars or wine skins (Job 32.19). The vintner may have used whatever empty containers he had to transport the wine from the press to his house. At home, he could then pour the wine into larger jars for storage. Once the wine was in jars, some sort of stopper became necessary to prevent conversion of the wine into vinegar. Unfired clay was probably the best solution for stoppering because it could be shaped to the jar's opening. The seal would become tighter still as the wine moistened the clay and caused it to expand. Unfired clay balls or stoppers were found at Ashkelon and at Godin Tepe, Iran, along with wine jars (Stager 1996, 64; Badler et al. 1990,
28). Olive oil was a possible sealant too (de Blij 1983, 50). With the fermentation process complete, the desired product was of course wine. Unfermented grape juice was most likely rare in ancient Israel because the yeasts of the skins would have begun to work on the juice soon after the grape skins were broken.

In the Hebrew Bible, four terms denote 'grape wine': ẓayin, tirosh, 'asis and hemor. The Septuagint uses only one term for wine, ainos. Ẓayin is the most frequent term, occurring 141 times in a variety of biblical sources. Tirosh occurs 38 times, also in a variety of biblical material; 'asis occurs five times, hemor once in the Massoretic text. Distinctions of quality in wine seem evident in terms drawn from epigraphic sources: ẓayin, tirosh, and 'asín, all occurring with the term tirosh. Ẓayin kḥl occurs on an Iron II decanter found near Hebron (Avigad 1972, 3–5). It is possible that the phrase denotes an especially dark wine or one from a particular area. Tirosh occurs on the Samaria ostraca, apparently to denote 'old wine' (nos. 1, 3, 5–10, 12–14, and 36; Kaufman 1966, 141–44). 'Asín is found on a recently recovered ostracoon from Ashkelon (Stager 1996, 66). It is difficult to establish how long wine could have lasted in the Iron Age before either being consumed or turned to vinegar. Varro (1.65.1) mentions an old wine as being a year old (Storr-Best 1912, 117). If containers were completely airtight, then the wine could last over a year. Biblical texts are silent about any tradition of ageing wine. In Ruth 2.14 bread is eaten with vinegar at the time of the barley harvest, though whether that was due to preference or necessity cannot be said.

IRON AGE WINE PRODUCTION AT TELL EN-NASBEH

Between 1926 and 1935 William F. Badè conducted five excavation seasons at Tell en-Nasbeh, most likely ancient Mizpah of Benjamin, c. 12 km. north-west of Jerusalem. During the course of these excavations he uncovered and published two wine presses (McCown 1947, 257, fig. 68, pl. 99:2–4). The remains found in association with these presses were mixed, which prevented McCown from securely dating them. Since wine presses tend to be found near or in the fields with which they were connected Zorn has suggested (1993, 230–31) that these presses belong to Tell en-Nasbeh Stratum 1, a period when the tell was probably being used as farm land in association with a Hellenistic-Roman agricultural estate.

Badè, however, also excavated the remains of what appear to be three additional, earlier, wine presses, which have not been recognized as such until now. The table below summarizes

<table>
<thead>
<tr>
<th>SQUARE</th>
<th>PLAN</th>
<th>PHOTO</th>
<th>SIZE: L × W</th>
<th>MAIN: L × W × D</th>
<th>OTHER: L × W × D</th>
<th>STRATUM</th>
</tr>
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<tbody>
<tr>
<td>P16</td>
<td>74</td>
<td>---</td>
<td>5.4 × 3.7 m.</td>
<td>2.2 × 3.7 m. × 30 cm.</td>
<td>3.2 × 3.7 m. × 50 cm.</td>
<td>4</td>
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<tr>
<td>AF-AG 163</td>
<td>32</td>
<td>---</td>
<td>13.7 × 4.5 m.</td>
<td>4.0 × 4.0 m. × 35 cm.</td>
<td>5.1 × 5.5 m. × ? cm.</td>
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<tr>
<td>AF-AG 163</td>
<td>P401a</td>
<td>---</td>
<td>7.0+ × 5.1 m.</td>
<td>2.1 × 1.4 m. × 20 cm.</td>
<td>2.3 × 1.9 m. × 30 cm.</td>
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<tr>
<td>AF-AG 163</td>
<td>P401b</td>
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<td></td>
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<td>N: 6.2 × 4.5 m. × ? cm.</td>
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<td>N: 2.0 × ? m. × 80 cm.</td>
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All dimensions are taken from the plans, which have their Tell en-Nasbeh Plan Number and are housed in the Badè Institute.

The photos (also housed in the Badè Institute) are given their Tell en-Nasbeh Photograph Number.

'Size' refers to the maximum external dimensions of each whole installation.

'Main' indicates the internal dimensions of the main (pressing) chamber; 'Other' the internal dimensions of the collecting chambers.
the data available on these installations, which is followed by a brief description of each press, a
discussion of the role of the presses at Tell en-Nasbeh, and a discussion of how these presses fit
into what we now know of the development of ancient Israelite agricultural practices. (The data
presented here are an adaptation of the material given in Zorn 1993, 239–35, 442, 866–868.)

The first installation, in square P16 (Fig. 1), is c. 5.4 m. long and c. 3.7 m. wide. Internally
it is divided into two parts. The north part of the installation is 3.2 m. long and has a floor
of 50 cm. lower than the section to the south. The south part is c. 2.2 m. long and cut c. 30 cm.
into the bedrock. In its north-west corner is a small circular cutting about half a metre wide and
20 cm. deep, perhaps to collect the dregs of the pressing process. The south end was probably
the treading basin and juice flowed down into the larger basin to the north. Several rock-cut
installations were found in the vicinity of the press. The smaller ‘cup-marks’ could have held
jars used for storing either wine or water for washing off after the treading.

A later double-wall cross the north-west corner of the installation. This wall is part
of Room 215; this room is part of a series of broad back rooms linked together to form a
casematelike wall around the settlement. This casematelike wall predates the massive offset-
insert wall further down slope which is generally attributed to King Asa of Judah in the very
early ninth-century b.c. on the basis of 1 Kings 15:22. The casematelike wall (Stratum 3C) and
associated settlement should belong to about the tenth century b.c. Unfortunately remains
predating Stratum 3, belonging to Early Bronze I and Iron I, in the north-north-east sector of
the site are fragmentary and impossible to date precisely. This wine press could thus belong
either to Stratum 4 and date to the early tenth century, or possibly even to Early Bronze I
Stratum 5. We incline towards an Iron I date for the press as all the dateable Early Bronze I
material found in context in this part of the site comes from funerary contexts and it does not
seem likely that a press would be situated within a burial area.

The central unit of the installation in AF-AG12 (Fig. 2 upper) is c. 4.0 m. on a side. The
section through this part of the site (Fig. 2 lower) shows the bedrock sloping down from 767.33
in Room 200 to c. 766.00 at the west end of the central unit of the press. Since the floor of the
central unit is 765.67, the depth of the installation is about 35 cm. A moveable stone basin
of 60 cm. wide was found in the south-west corner of this unit. In the south-east quadrat is
'Silo' 186, a not quite square installation, c. 1.3 m. on a side, which descends over 2.5 m. in irregular steps. It is unclear if this rock cutting is contemporary with the press or not. How it would have functioned with the press is unclear. The north-east corner of the central unit is marked off by a line, probably indicating a change in elevation, but whether lower or higher than the rest of the unit cannot be determined because of the lack of internal levels.

The south unit is irregularly shaped, and could be lower or higher than that in the centre. It is c. 3.5 m. north to south, and its maximum width east to west is 4.5 m. There is evidently a circular depression near its north edge.

The north unit is c. 6.2 m. long by 4.5 m. wide. A slightly curving line is drawn down the length of the unit, probably indicating a change in elevation; most likely the area to the west is higher, since that would follow the slope in the bedrock here.

Since only the central unit has elevations, it is uncertain if the central unit is higher or lower than those to north and south. The central unit of the press in AF-AG29 (below) was higher than those to either side, so perhaps the same situation applies here; however, the lack of elevations in the side units, or any photographic evidence, makes this suggestion very tentative.

Beyond the east edge of the press are two walls. Since the presses are cut into bedrock these cannot be retaining walls for the presses. The easternmost wall could be a retaining wall for the other, which is against the bedrock. The function of the wall against the bedrock is uncertain. Did this wall provide support for a cover over the presses?

Presumably this press is associated with Building 163.01 to the west. At Tell en-Nasbeh the use of walls two stones thick (as in Building 163.01) tends to be associated with constructions post-dating the construction of the offset-inset wall. Possibly then this pressing complex should be dated sometime after the ninth century B.C., though its final period of use is unknown.

The press in AF-AG29 is the only one for which there is photographic evidence (Fig. 3). It is situated on a ledge, at an elevation of 771.50, c. 4.0 m. wide at the maximum (Fig. 2). The bedrock drops off sharply to the east, to c. 768.60, almost 3.0 m. in a distance of only 6.0 m. To the west is a moat which is found at several points around the site; the drop off here is also sharp, but only c. 1.5 m.

The complex appears to be three rectangular or square depressions linked on their west sides by short channels. The south unit is c. 30 cm. deep, the central unit is c. 20 cm. deep, and the last is apparently c. 50 cm. deep. The depths of the connecting channels are not given. The bottom course of a stone wall runs along the west side of all three units; a circular depression marks possibly the south limit of the wall.

The south unit comprises a rectangular depression c. 2.3 x 1.9 m., with a narrow extension in its south-west corner to the south which is 2.5 m. long by 70 cm. wide. The central unit is 2.1 x 1.4 m. Only the south part of the last unit on the north was excavated; it is c. 2.0 m. on its south side. The channels connecting the units are c. 40 cm. long and 30 cm. wide. To the south is a rectangular block; it is not clear if this is a squared piece of bedrock, or a rough ashlar wall fragment. The central basin is higher than those to north and south, so the liquid would probably have flowed in either direction. The reason for the long, finger-like extension in the south unit is unclear.

This complex runs along a narrow ledge between the moat on the west and a steep drop in the bedrock on the east. Was the press constructed after the moat was cut, or was the moat cut so as to avoid the existing press (and the entrance of Cave 193 farther to the west)? Possibly this press, like that farther to the east, is associated with Building 163.01 and so should be dated sometime after the middle of the ninth century, post-dating the defences constructed by Asa. Likewise, its final period of use is unknown.
These three new presses from Tell en-Nasbeh, along with the two recognized earlier by the excavators, trace the development of wine production technology from the relatively simple single-chamber press with different internal floor levels of Iron I Stratum 4, to the crude multi-chamber varieties of Iron II Stratum 3, to the better constructed forms of Hellenistic-Roman Stratum 1. The Tell en-Nasbeh presses seem developmentally earlier than the Iron Age presses recently recovered in the Jerusalem area (e.g., Feig 1996, 3-7). The depth of the Stratum 4 press (more than 1.2 m.) also illustrates the technological template which the author of the story in Judges 6:11-8:35 had in mind when he described how Gideon was able both to hide in a wine press and to thresh grain there.

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