N₁₆ in the Archaic Texts
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§1. The sign N₁₆ is scarcely attested in the archaic texts, limited to only the Uruk III/JN period. Until recently, only three attestations were available,¹ all in tablets coming from Uruk and in fragmentary contexts. A few more tablets in which the sign occurs are now available and in much better preserved condition, albeit of uncertain provenance. The scope of the following analysis is to deduce and assess the meaning of this sign.

§2.1. A text that has recently been made available,² an almost complete but damaged tablet with an account of barley destined as food (GU₇), includes the sign N₁₆ in a partially broken context. The transliteration of the relevant section is provided in the following.³

<table>
<thead>
<tr>
<th>Tablet</th>
<th>Transliteration</th>
</tr>
</thead>
<tbody>
<tr>
<td>O0105a</td>
<td>6N₁₄ 3N₁ 3N₃₉a 1N₂₄ 1N₂₈ [... ]</td>
</tr>
<tr>
<td>O0105b₁</td>
<td>6N₁₄ 1N₂₄ 1N₂₈ SU UR₅a</td>
</tr>
<tr>
<td>O0105b₂</td>
<td>3N₁ 1N₁₆ TARₐ</td>
</tr>
</tbody>
</table>

§2.2. Case O0105a registers the total of the quantity of barley listed in case O0105b₁, qualified as SU UR₅a, and the quantity reported in case O0105b₂, qualified as “tribute” (TARₐ). Such “tribute” is usually equivalent to 10% of the value of the relevant transaction (case O0105b₁). In terms of N₁ = “barig”,⁴ we have the following equivalence:

39.75 (total) = 36.15 (SU UR₅a) + 3 +1N₁₆ (TARₐ)

which, by calculation, would provide for 1N₁₆ the value 0.6 (≈ 39.75 - (36.15 + 3)). Since such a quantity is always written 3N₃₉a, as in case O0105a, we have to assume a scribal error in case O0105b₂, which should be corrected to:

3N₁ 1N₁₆ TARₐ

i.e., in terms of barig, equivalent to 3.6+1N₁₆.

§2.3. Considering that 10% of the quantity in case O0105b₁ is

\[
\frac{1}{10} \times (6N₁₄ 1N₂₄ 1N₂₈)
\]

= 3.615 (barig),

it would follow that

1N₁₆ = 0.015 (barig)

§2.4. As a consequence, the total reported in case O0105a should be restored as

6N₁₄ 3N₁ 3N₃₉a 1N₂₄ 1N₂₈ 1N₁₆.

¹ The three tablets are W 21385, a two-column fragment with a broken context (O0201: 3N₁₄ [... ] 1N₁₆ EN, X U₂x2N₂₇ [...]), where the traces of the sign rendered as 1N₁₆ allow its reconstruction as NUMUN as well; W 21557, a fragmentary account of possibly grain groats, where the sign N₁₆ occurs in a broken context (R0101: [... ] 1N₃₀c 1N₁₆ 3N₃₇ [... ] H½gunu [...]); and ATU 3, pl. 75, W 21208, a fragmentary lexical list, where the signs 1N₁₆ and 1N₁₇ are listed in sequence (O0105-6: 1N₁ 1N₁₆ / 1N₁₆ 1N₁₇).

² MS 4499, to be published in R. K. Englund, Proto-Cuneiform Texts from the Schøyen Collection (=PCTSC); photographs and transliteration available in the CDLI under no. P006303.

³ The transliteration provided [5 Dec. 2005] in CDLI has SANGA UR₅a in case O0105b₁; the reading SU UR₅a is supported by the parallel sections of MSVO 3, 26 (O0101a / O0102a), CDLI no. P006396 (O0304a / R0101), MS 4496 (O0101), MS 4559 (O0201), and NES 51-10-001.1 (O0101a / O0102a / O0103a), NES 51-10-032 + NES 51-10-034 (R0101b1) and NES 51-10-007 (O0201) (the last three texts are to be published as CUSA 1 [S. Monaco, The Cornell University Archaic Tablets (=Cornell University Studies in Assyriology vol. 1, forthcoming)], nos. 74, 97 and 172).

⁴ For the value of the barig cf. fn. 11 below.
Such calculations will be reviewed below by taking into account the correct value of \( N_{16} \), as resulting from the following textual analysis.

§3.1. CUNES 50-06-203,\(^5\) a well preserved tablet with an account of beer for five months, registers the results of calculations similar to those recorded in the tablet MS 4499. The transliteration of the obverse (the reverse is uninscribed) reads as follows:

\[
\begin{align*}
O0101 & \quad 1N_{16} \text{ SE} \ U_{4} \ 1N_{57} \text{ KAŠ} \\
O0102a & \quad 1N_{1} \ 3N_{39a} \ 1N_{29a} \ 1N_{16} \ U_{4} \ 1N_{1} \text{ KAŠ} \\
O0102b1 & \quad 1N_{1} \ 2N_{39a} \ 1N_{24} \ U_{4} \ 1N_{1} \\
O0102b2 & \quad 1N_{24} \ 1N_{29a} \ 1N_{16} \ \text{TAR}_{4} \\
O0103 & \quad 1N_{14} \ 2N_{1} \ 1N_{39a} \ 1N_{24} \ U_{4} \ 5N_{1} \text{ KAŠ} \\
O0104 & \quad \text{AB}_{a} \ \text{KAŠ}
\end{align*}
\]

§3.2. The quantity recorded in case O0101 is a daily ration of beer equivalent to \( \frac{1}{20} \) (barig) of barley, which is calculated in case O0102b1 over a period of one month (\( U_{4} \times 1N_{1} \)):\(^6\)

\[
\begin{align*}
1N_{1} \ 2N_{39a} \ 1N_{24} & = 30 \text{ (days)} \times 1N_{28} \\
& = 30 \times 0.05 \text{ (barig)} \\
& = 1.5 \text{ (barig)}
\end{align*}
\]

§3.3. Case O0102b2 records the “tribute” (\( \text{TAR}_{4} \)), equivalent to 10% of the quantity registered in the preceding case O0102b1:

\[
\begin{align*}
\frac{1}{10} \times (1N_{1} \ 2N_{39a} \ 1N_{24}) \\
& = \frac{1}{10} \times 1.5 \\
& = 0.15 \text{ (barig)} \\
& = 1N_{24} \ 1N_{39a} \ 1N_{16} \\
& = 0.1 + 0.04 + 0.01 \\
& = \frac{1}{10} + \frac{1}{25} + \frac{1}{100}
\end{align*}
\]

§3.4. It follows that \( 1N_{16} \) has the value \( \frac{1}{100} \) “barig”. Consequently, the quantity reported in case O0102a, being the sum of the quantities in cases O0102b1 and O0102b2, results, in terms of barig, in

\[
1N_{1} \ 3N_{39a} \ 1N_{29a} \ 1N_{16} = 1.65 \text{ (barig)}
\]

§3.5. Obviously, such a numerical value for the sign \( 1N_{16} \) is much more suitable than the value (0.015) calculated in the previous paragraph, and consequently it shall be assumed that in tablet MS 4499 the value of the “tribute” was rounded off to 3.61 (barig). It follows that the total quantity reported in case O0105a should read

\[
\begin{align*}
\gamma \ 6N_{14} \ \gamma \ 3N_{1} \ 3N_{39a} \ \gamma \ 1N_{24} \ 1N_{28} \ \gamma \ [1N_{16}] \\
& = 36 + 3 + 0.6 + 0.1 + 0.04 + [0.01] \\
& = 39.75 \text{ (barig)}
\end{align*}
\]

§4.1. The sign \( N_{16} \) occurs in two other archaic tablets of the Cornell University Collection, one of which (CUNES 50-06-217) brings additional evidence for the value of \( N_{16} \) (\( \frac{1}{100} \)) obtained above. The other tablet, CUNES 51-10-007,\(^7\) an account of grain groats, registers in case O0102 an amount of groats (\( 1N_{1} \ 1N_{24} \ \gamma \ 1N_{16} \ H_{1} \text{gunu}_{a} \ 1N_{2} \ ERIN \ 2a \ \text{UR}_{2} \)), with the possible occurrence of the sign \( N_{16} \), the value of which, however, cannot be determined from the context.

§4.2. CUNES 50-06-217,\(^9\) a damaged tablet with a mixed account of cereal products (bread and beer), records a quantity (of bread?), measured in the numerical notation \( N_{51} \), together with the corresponding amount of grain groats. The relevant section reads as follows:

\[
\begin{align*}
R0302a & \quad 2N_{51} \ [\ldots] \ 1N_{16} \\
R0302b & \quad \gamma \ 2N_{1} \ 2N_{39a} \ \gamma \ H_{1} \text{gunu}_{a}
\end{align*}
\]

where \( 1N_{16} \) in case R0302a is to be regarded as the reference value for the accounted product.\(^10\) The following equivalences confirm the value \( \frac{1}{100} \) for the sign \( 1N_{16} \), which represents the equivalent amount of grain groats for a single unit of a small cereal product.

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\(^5\) To be published as \( \text{CUSA} \) 1, 143.

\(^6\) Tablets recording similar calculations are \( \text{CDLB} \) 2003/4 and NES 51-01-098 (\( = \text{CUSA} \) 1, 114).

\(^7\) \( \text{CUSA} \) 1, 172.

\(^8\) There is also an unlikely occurrence in NES 51-01-100 (\( = \text{CUSA} \) 1, 149), which is disregarded in the present analysis because the shape of this and other numerical signs, present in the same case (O0103), do not allow a reliable identification of the signs themselves.

\(^9\) \( \text{CUSA} \) 1, 112.

\(^10\) For similar case arrangements and numerical relationships in analogous accounting contexts of various kinds of breads and cereal products, cf. the following texts: \( \text{MSVO} \) 1, 90 (O0206a/O0206b: \( 1N_{51} \ \text{GAR} \ 1N_{24} \ / \ 4N_{5} \)), \( \text{MSVO} \) 1, 111 (O0103a/O0103b: \( 1N_{51} \ \text{GAR} \ 1N_{28} \ / \ 1N_{20} \)), \( \text{MSVO} \) 3, 3 (O0101a/O0101b; O0103a/O0103b: \( 2N_{51} \ 1N_{30c} \ \text{DU}_{8c} \ \text{AB}_{\delta} \ \text{EZINU}_{\delta} \ / \ 4N_{5} \ 4N_{12c} \)); \( 5N_{51} \ 1N_{39c} \ \text{DU}_{8c} \ \text{GI}_{5} \ \text{SU}_{3c} \ \text{SAR}_{\gamma} \ / \ 2N_{20} \)); \( \text{MSVO} \) 4, 66 (O0102a/O0102b; O0103a/O0103b; O0104a/O0104b; O0105a/O0105b: \( 1N_{51} \ 1N_{24} \ / \ 2N_{20} \)); \( \gamma \ 1N_{51} \ 1N_{26} \ / \ 1N_{20} \ 2N_{5} \ 2N_{51} \ 1N_{34} \ 1N_{28} \ / \ 2N_{20} \ 3N_{5} \ 3N_{37} \ \text{SU} \ / \ 1N_{51} \ \text{H}_{1} \text{gunu}_{\delta} \ 1N_{2} \ \text{ERIN} \ 2a \ \text{UR}_{2} \)); \( \text{MES} \) 50.08.073.1 (O0103a/O0103b; O0102a/O0102b; O0105a/O0105b: \( 2N_{51} \ 1N_{34} \ 3N_{7} \ \text{SU} \ / \ 1N_{51} \ \text{H}_{1} \text{gunu}_{\delta} \ 1N_{2} \ \text{ERIN} \ 2a \ \text{UR}_{2} \)); \( \text{CUSA} \) 1, 118) (O0101a/O0101b; O0102a/O0102b: \( 2N_{51} \ \text{SE}_{a} \ \text{GAR} \ 1N_{29c} \ / \ 1N_{20} \ 3N_{5} \ 2N_{53} \ 1N_{30c} \ \text{SE}_{a} \ \text{GAR} \ / \ 4N_{5} \)).
probably bread. Thus

\[(R0302a) \ 2N_{31} \ldots 1N_{16} \]
\[= 240 \ [\text{breads ?}] \times \frac{1}{100} \ \text{(barig each)}\]

which, in terms of barig, gives

\[(R0302b) \ \gamma 2N_1 \ 2N_{39} \ \gamma H\gamma g\nu\nu_n \]
\[= 2.4 \ \text{(barig of)} \ \text{grain groats}\]

\$5. \ In \ conclusion, \ there \ is \ sufficient \ textual \ evidence \ available \ to \ demonstrate \ the \ numerical \ value \ of \ the \ sign \ N_{16}, \ representing \ the \ smallest \ fraction \ \left(\frac{1}{100}\right) \ of \ the \ unity \ of \ capacity \ barig \ currently \ known. \ With \ such \ considerations \ in \ mind, \ it \ is \ surely \ of \ interest \ to \ analyze \ in \ greater \ detail \ the \ text \ W 21208.8+. \ The \ tablet \ is \ a \ lexical \ list \ dealing \ with \ cereal \ products \ that \ registers \ in \ sequence \ several \ kinds \ of \ bread, \ following \ apparently \ two \ criteria. \ These \ are \ typology \ and \ size \ of \ the \ products. \ In \ the \ first \ column, \ only \ partially \ preserved, \ there \ are \ at \ least \ three \ numerical \ notations, \ which \ could \ denote \ the \ size \ of \ some \ standard \ type \ of \ bread, \ probably \ by \ measuring \ the \ relevant \ quantity \ of \ cereals \ needed \ for \ their \ production. \ It \ is \ noteworthy \ that \ 1N_{16} \ is \ followed \ by \ 1N_{17}, \ for \ which \ a \ value \ of \ \frac{1}{200} \ \text{(barig)}, \ corresponding \ to \ \frac{1}{8} \ \text{of} \ \text{a liter}, \ seems \ logically \ the \ most \ appropriate. \ Since \ there \ are \ presently \ no \ other \ occurrences \ of \ the \ sign \ N_{17} \ in \ the \ known \ archaic \ tablets, \ however, \ the \ proposed \ value \ must \ be \ considered \ hypothetical \ for \ the \ time \ being, \ awaiting \ future \ textual \ evidence \ for \ its \ confirmation.

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11 Assuming for the barig (N$_1$) a value of approximately 24 liters (according to P. Damerow and R. K. Englund, “Die Zahlzeichensysteme der Archaischen Texte aus Uruk,” in M. W. Green and H. J. Nissen, Zeichenliste der Archaischen Texte aus Uruk [=ATU 2; Berlin 1987] 153-154, fn. 60), 1N$_{16}$ represents about $\frac{1}{4}$ of a liter. It is worth noting that in later periods the minimum value of the rations due to the lowest class of workers (hum) amounted to 10 sila$_3$ per month (cf S. Monaco, “Parametri e Qualificatori nei testi economici della terza Dinastia di Ur,” OrAnt 24, 21ff.). This value corresponds to a daily ration amounting to $\frac{1}{3}$ sila$_3$, equivalent to approximately $\frac{1}{4}$ liter (based on a sila$_3$ value of $\frac{5}{6}$ liter), i.e., the same value represented by 1N$_{16}$. Whether such a coincidence implies a continuity in the Mesopotamian administrative ration system of the 3rd millennium shall be left to a study that is beyond the scope of the present analysis.