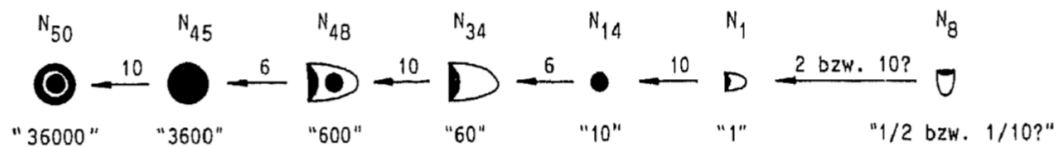Some notes on how to approach numerals in the TF tutorial on proto-cuneiform. Whereas non-numeral signs are not ordered in proto-cuneiform, numerals always are, so any tutorial on ordered sets in TF should be here, unordered sets in TF in a different section.
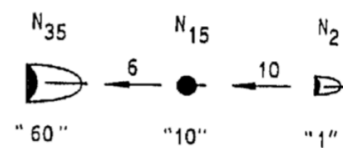
System S – counting discrete objects, eg. Sheep, people, etc.
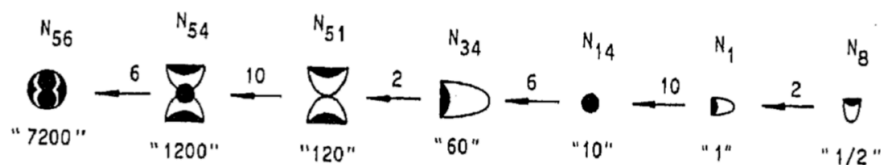

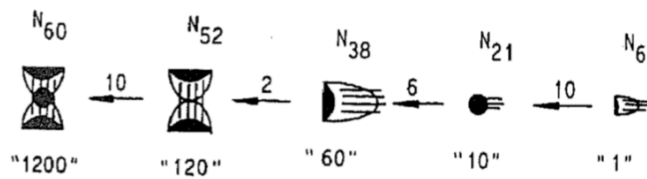System S' – unclear, but probably for counting dead animals and people

System B – used for counting small discrete objects such as loaves of bread

System B* -- unclear

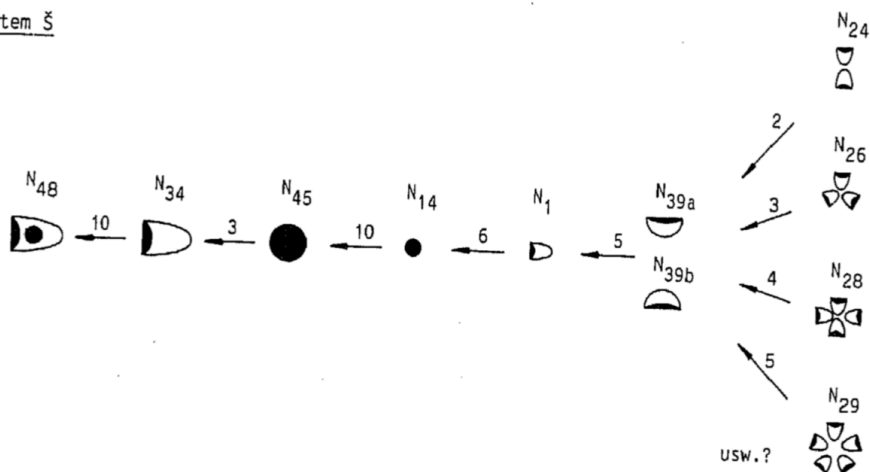N_{60} N_{52} N_{38} N_{21} N_6

$\quad$ 10 $\quad$ 2 $\quad$ 6 $\quad$ 10

"1200"   "120"   "60"   "10"   "1"

System Š – capacity measure for grain

vgl. ERBM I, 20 und ERBM II, 15-16, 25 und 35.

System Š

N_{24}

2

N_{26}

N_{48} N_{34} N_{45} N_{14} N_1 N_{39a} 3

$\quad$ 10 $\quad$ 3 $\quad$ 10 $\quad$ 6 $\quad$ 5

N_{39b} 4 N_{28}

5

N_{29}

usw.?

Belege für das System Š

System Š' – probably a distinct form of grain

System Š'

N_{18} N_3 N_{40}

$\quad$ 6 $\quad$ 5 $\quad$ 2
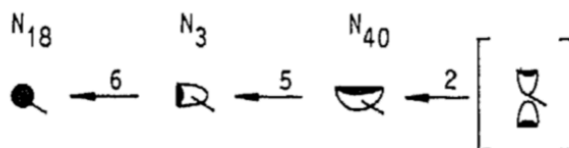
Belege für das System Š'

System Š''

System Š"

N_{46} N_{49} N_{36} N_{46} N_{19} N_4 N_{41}
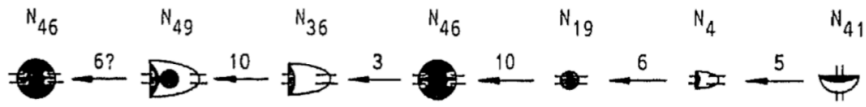
Das vom System Š abgeleitete System Š" ist in allen Gruppen Archaischer Texte aus ...

System Š*

System Š*

N_{37} N_{47} N_{20} N_5 N_{42a} N_{42b} N_{25} N_{27}
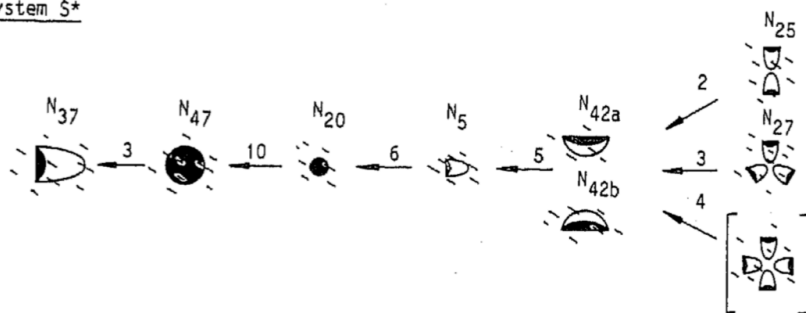
System G – ag land surface

System G

N_{45} N_{50} N_{14} N_{22} N_1

BUR$_3$ EŠE$_3$ IKU
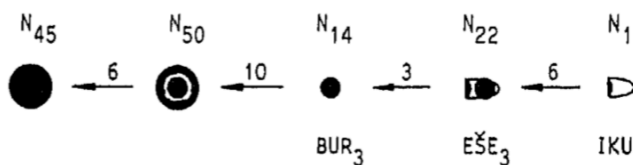
No need to include all these in the tutorial, and in fact it would be too much and counterproductive. And there are actually other systems beyond these as well. Perhaps best to begin with the three derived grain notations: namely Š', Š'' and Š*. These are derived systems and not the statistically most frequent, but they are unambiguously identifiable and none of the numeral signs used in these three systems are used in any other system or for

any other purpose. So these three systems include the following signs, ordered by their names:
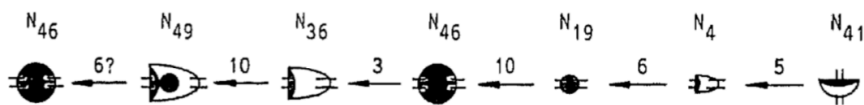
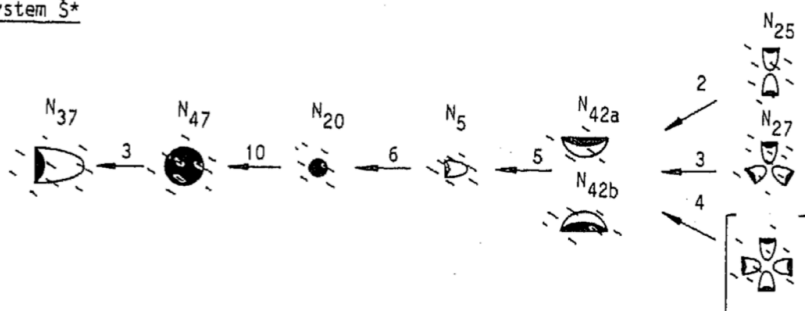Š′ = N40, N03, N18, N24, N45

System Š′
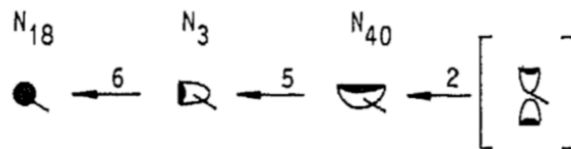
Belege für das System Š′

Š′′ = N41, N4, N19, N46, N36, N49

System Š″

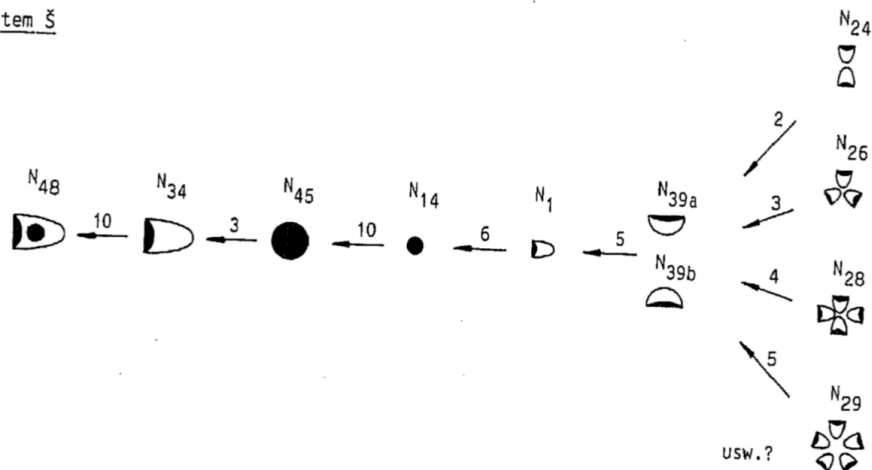Š* = N25, N27, N28, N42, N5, N20, N47, N37

System Š*

The underived Š system, below, probably for measuring barley, however, uses several of the same numeral signs as the basic sexigesimal system for human beings, livestock and other

discrete objects. So, the the real meat of a tutorial section on numerals should deal primarily with differentiating the S and Š systems.
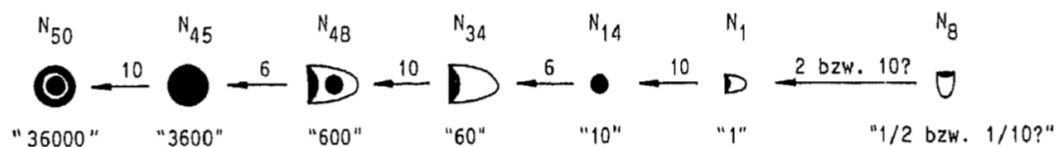
Note in particular that N1, N14, N34 and N45 are used in both of these systems, but the more important difference bertween the two systems is that the order and bundling amounts in the two systems are different: when counting units of barley, 6x N01 = 1x N14 (above), but when counting sheep, 10x N01 = 1x N14 (below).

There are three ways to differentiate these two systems, which people working on these texts use indiscriminately without spending much time thinking about it. But obviously we should brainstorm about which of these is the most important method and how to describe it.

1. Anytime N1 N14 N34 or N45 co-occur with N24 N26 N28 N29 or N39a/b, we can be sure that we are in the Š system rather than S system

2. Numerals are always, always, always strictly ordered by magnitude in proto-cuneiform, bigger numerals always before smaller numerals, and these two systems order the numerals differently. In Š N34 > N45 > N14 > N01, but in S N45 > (N48) > N34 > N14 > N01.

3. One can look for quantities of numeral signs that violate the bundling units, say, 7(N01), which is only possible in S but not in Š, since the Š system bundles N01 at 6x.

4. We could also actually add up all the numerals in a tablet and compare it with the total on the reverse.

Generally speaking the numerals are a nice place to do any training on ordered sets in TF, whereas unordered sets should be dealt with in the non-numerals, probably livestock, which is very well studied in proto-cuneiform.