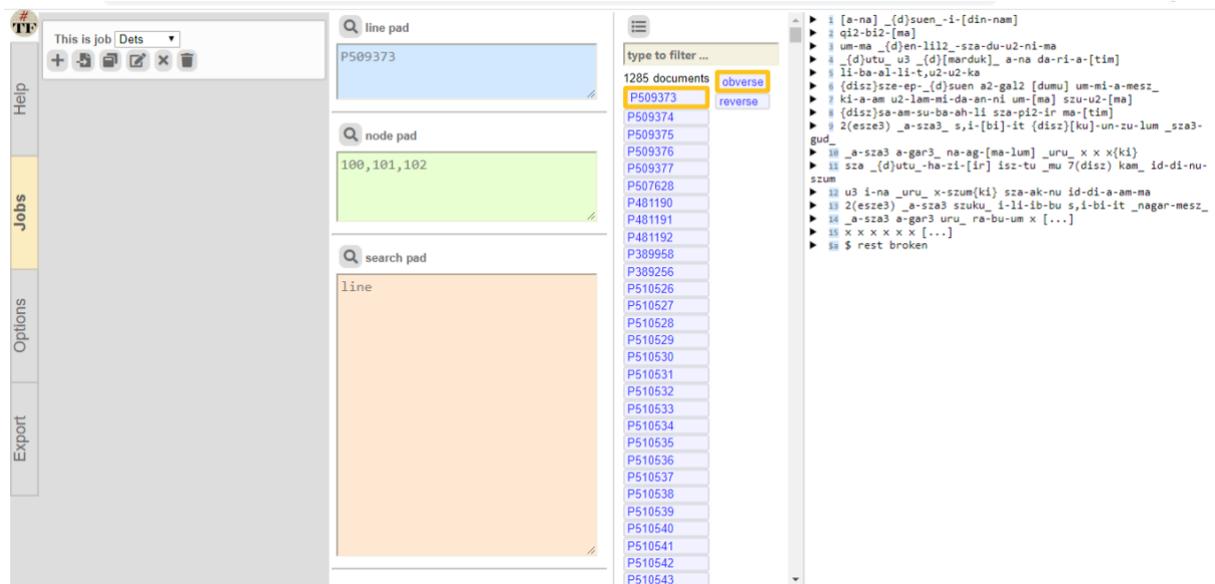


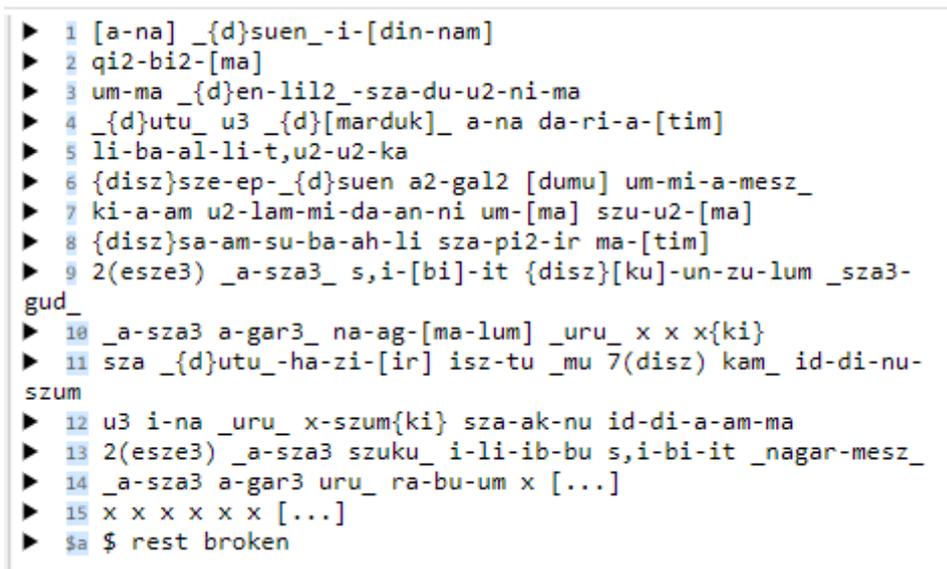
Rundown of Alba de Ridder's short presentation in the Lorentzworkshop 2020.

The goal of a short sprint in the summer of 2019 was to tag parts of speech in a corpus of Old Babylonian letters. Present were Ernst Boogert, Cale Johnson, Martijn Kokken, Alba de Ridder and Dirk Roorda.

Part 1. The Basis



1 A Babylonian text in TF



2 Above, enlarged

Here you see an example of a Babylonian letter. We tried to use orthographic shortcuts to pinpoint Parts of Speech. Here are some examples of how we did that.

Part 2. Determinatives

Note the {d}, {ki}, {disz} parts: these are determinatives. They indicate personal names, place names, deity names and materials of which an item is made (think of reed, wood and clay). These determinatives stand next to nouns. Dirk Roorda used a script to find these determinatives and made them possible to search for them in the TF browser.

This is job | Dets

line pad
P509373

node pad
100,101,102

search pad
line
sign det=1

20 results per page

Total 6796

2000	2900	2990
2100	2910	2991
2200	2920	2992
2300	2930	2993
2400	2940	2994
2500	2950	2995
2600	2960	2996
1000	2700	2970
2000	2800	2980
3000	2900	2990
4000	3000	3000
5000	3100	3010
6000	3200	3020
3300	3030	3003
3400	3040	3004
3500	3050	3005
3600	3060	3006
3700	3070	3007
3800	3080	3008
3900	3090	3009

1 3000 6796

n line sign

- ▶ 2990 P365970 obverse:3 _2(d)isz) ma-na ku3-babbar_sza i-na {kusz}tu-uk-ka-ni ka-an-ku-u2 | {kusz} |
- ▶ 2991 P365970 obverse:4 tu-sza-bi-lam {d}suen-e-ri-ba-am sza_nagar_ | {d} |
- ▶ 2992 P365970 obverse:5 {na4}ku-nu-uk-ki-szu u2-sze-ep-ti-szu-ma | {na4} |
- ▶ 2993 P365970 reverse:3 {na4}ku-nu-uk-ki-la ad-di-in-szum-ma | {na4} |
- ▶ 2994 P365970 reverse:9 _iti udru{duru5} u4 1(u)-kam_ku-un-kam szu-bi-lam | {duru5} |
- ▶ 2995 P365971 obverse:10 a-na babila2{ki} ta-al-li-a-am | {ki} |
- ▶ 2996 P365971 reverse:2 i-nu-ma a-na babila2{ki#} [ta-li-a]-am | {ki#} |
- ▶ 2997 P365971 reverse:7 a-na babila2{ki} li-ib-lam | {ki} |
- ▶ 2998 P479921 obverse:1 a-na ARAD2-{d}suen | {d} |
- ▶ 2999 P479921 obverse:4 {d}utu u3 {d}marduk li-ba-al--t,u2-ka | {d} |
- ▶ 3000 P479921 obverse:4 {d}utu u3 {d}marduk li-ba-al--t,u2-ka | {d} |
- ▶ 3001 P479921 obverse:8 ma-har sza-pir zimbir{ki} |

3 Determinatives in TF

n	line	sign
▶	2990 P365970 obverse:3	_2(disz) ma-na ku3-babbar_ sza i-na {kusz}tu-uk-ka-ni ka-an-ku-u2 {kusz}
▶	2991 P365970 obverse:4	tu-sza-bi-lam {d}suen-eri-ba-am sza _nagar_ {d}
▶	2992 P365970 obverse:5	{na4}ku-nu-uk-ki-szu u2-sze-ep-ti-szu-ma {na4}
▶	2993 P365970 reverse:3	{na4}ku-nu-uk-ki-ia ad-di-in-szum-ma {na4}
▶	2994 P365970 reverse:9	_iti udru{duru5} u4 1(u)-kam_ ku-un-kam szu-bi-lam {duru5}
▶	2995 P365971 obverse:10	a-na babilā2{ki} ta-al-li-a-am {ki}
▶	2996 P365971 reverse:2	i-nu-ma a-na babilā2{ki#} [ta-li-a]-am {ki#}
▶	2997 P365971 reverse:7	a-na babilā2{ki} li-ib-lam {ki}
▶	2998 P479921 obverse:1	a-na ARAD2-{d}suen {d}
▶	2999 P479921 obverse:4	{d}utu u3 {d}marduk li-ba-al--t,u2-ka {d}
▶	3000 P479921 obverse:4	{d}utu u3 {d}marduk li-ba-al--t,u2-ka {d}
▶	3001 P479921 obverse:8	ma-har sza-pir zimbir{ki}

4 Above, enlarged

Part 3. Logograms

The words encased by _'s are so called logograms: signs used to express words in the Sumerian language, instead of being written syllabically in Akkadian. In the Old Babylonian letter corpus these logograms are used solely to express nouns.

Part 4. Prepositions

Words following prepositions ana, ina, eli, isztu, itti and arki are nouns. Roorda tagged the words following these prepositions as nouns.

The screenshot shows the TF browser interface. On the left, there are tabs for 'Help', 'Jobs', 'Options', and 'Export'. The main area is divided into three search pads: 'line pad' (containing 'P509373'), 'node pad' (containing '100,101,102'), and 'search pad' (containing a search query for 'line' and 'word' with signs like '=: sign reading=a'). On the right, a list of results is displayed, showing line numbers, words, and signs. The total number of results is 4072. The results are sorted by line number, and the current position is 290. The results show various signs and words, including 'ana', 'na', and 'a-'. The signs are highlighted in yellow.

5 Proposition ana in TF

This is an enlarged view of the TF browser results for the sign 'ana'. The results are listed in a table with columns for 'n', 'line', 'word', 'sign', and 'sign'. The results are sorted by line number, and the current position is 290. The results show various signs and words, including 'ana', 'na', and 'a-'. The signs are highlighted in yellow.

n	line	word	sign	sign
280	P510591 obverse:18	sze-a-am	a- na	_dumu#?_ a-
281	P510591 reverse:6	i-na pa-ni	a- na	_zimbir(ki)_
282	P510592 obverse:1	a-wi-lim sza {d}marduk	a- na	u2-ba-al#-la#-t,u2-szu
283	P510592 obverse:7	szu-ul-mi-ka asz-pur-ra-am	a- na	a-
284	P510592 obverse:11	{d}utu-da-a-a-an	a- na	_dumu_qu2-ra-ad-dingir
285	P510592 obverse:16	{d}i-szum-ib-ni-szu	a- na	a-
286	P510592 reverse:8	_gu4 hi-a_sza# x x x [x	a- na	x (x)] x
287	P510592 reverse:11	_gu4 hi-a_szu-nu-ti	a- na#	ma#-as,-s,a-ar-tim-ma
288	P510593 obverse:1	a-wi-lim sza {d}marduk	a- na	u2-ba-al-li-t,u2-szu
289	P510593 obverse:8	i-na pa-ni-tim i-nu-ma	a- na	tam-li-tim a-na e2-duru5-bi2-sa3(ki#)
290	P510593 obverse:8	i-na pa-ni-tim i-nu-ma a-na	a- na	tam-li-tim a-na e2-duru5-bi2-sa3(ki#)

6 Above, enlarged

Part 4. Prelude to verbs

We did not get around to tag verbs yet. Here I will present some methods to identify verbs using the TF browser.

Words starting with the sign u2 are verbs in the D or Š stem.

This is Job: Dets

line pad: P509373

node pad: 100,101,102

search pad: word
=: sign reading=u2
<: sign reading~[^aiue][aiue]

n	word	sign	sign
1	P509373 obverse:7	u2- lam- mi- da- an- ni	u2- lam-
2	P509373 reverse:14	u2- lam- ma- du- u2- ma	u2- lam-
3	P509373 reverse:16	u2- sza- ab- ba- x	u2- sza-
4	P509374 obverse:16	u2- na- hi- i- id- ka	u2- na-
5	P509376 obverse:3	u2- na- ah- hi- id- ka	u2- na-
6	P509377 obverse:6	u2- na- ah- i- id- ka	u2- na-
7	P509377 obverse:7	u2- sza- bi- la- ak#- kum#	u2- sza-
8	P509377 reverse:3	u2- ne- eh- [...]	u2- ne-
9	P510527 obverse:14	u2- da- an- ni- na- am- ma	u2- da-
10	P510527 reverse:4	u2- sza- ab- ba- lu- nin	u2- sza-
11	P510527 reverse:6	u2- la- am- ma- ad	u2- la-
12	P510527 reverse:10	u2- sza- ab- ba- lam	u2- sza-
13	P510528 obverse:5	u2- de- ek- ki- ma	u2- de-

7 Words starting with u2

n	word	sign	sign
1	P509373 obverse:7	u2- lam- mi- da- an- ni	u2- lam-
2	P509373 reverse:14	u2- lam- ma- du- u2- ma	u2- lam-
3	P509373 reverse:16	u2- sza- ab- ba- x	u2- sza-
4	P509374 obverse:16	u2- na- hi- i- id- ka	u2- na-
5	P509376 obverse:3	u2- na- ah- hi- id- ka	u2- na-
6	P509377 obverse:6	u2- na- ah- i- id- ka	u2- na-
7	P509377 obverse:7	u2- sza- bi- la- ak#- kum#	u2- sza-
8	P509377 reverse:3	u2- ne- eh- [...]	u2- ne-
9	P510527 obverse:14	u2- da- an- ni- na- am- ma	u2- da-
10	P510527 reverse:4	u2- sza- ab- ba- lu- nin	u2- sza-
11	P510527 reverse:6	u2- la- am- ma- ad	u2- la-
12	P510527 reverse:10	u2- sza- ab- ba- lam	u2- sza-
13	P510528 obverse:5	u2- de- ek- ki- ma	u2- de-

8 Above, enlarged

Using the browser to search for verb patterns using a i-CV-VC-CV-VC gives verbs in the G durative. This can be extended to other verbal forms as well.

This is job: Dets

line pad
PS09373

node pad
100,101,102

search pad

```
word
= : sign reading=i
< : sign reading~^[^aiue]
[aiue]$
< : sign reading~^[aiue]
[^aiue]$
< : sign reading~^[^aiue]
[aiue]$
< : sign reading~^[aiue]
[^aiue]$
```

expand all lines
expand all nodes
expand all results

30 current position
20 results per page

Total 58

n	word	sign	sign	sign	sign	sign
20	P313308 reverse:17	i-	ga-	am-	ma-	ar-
21	P313312 reverse:1	i-	na-	ak-	ku-	ud-
22	P313317 reverse:8	i-	ha-	al-	li-	iq-
23	P313318 obverse:8	i-	ka-	al-	lu-	u2-
24	P313360 obverse:13	i-	da-	ab-	bu-	ub-
25	P313365 obverse:8	i-	da-	ab-	bu-	um-
26	P313373 reverse:7	i-	pa-	ar-	<ri>-	ik-
27	P275095 obverse:9	i#-	pa#-	ar#-	ri#-	ik#-
28	P386461 obverse:5	i-	ta-	ak-	la-	an-
29	P386461 reverse:3	i-	ta-	ak-	la-	an-
30	P386478 reverse:14'	i-	sa-	an-	ni-	iq-
31	P386004 obverse:12	i-	re-	ed-	du-	u2-

9 Verbs in G durative

n	word	sign	sign	sign	sign	sign
20	P313308 reverse:17	i-	ga-	am-	ma-	ar-
21	P313312 reverse:1	i-	na-	ak-	ku-	ud-
22	P313317 reverse:8	i-	ha-	al-	li-	iq-
23	P313318 obverse:8	i-	ka-	al-	lu-	u2-
24	P313360 obverse:13	i-	da-	ab-	bu-	ub-
25	P313365 obverse:8	i-	da-	ab-	bu-	um-
26	P313373 reverse:7	i-	pa-	ar-	<ri>-	ik-
27	P275095 obverse:9	i#-	pa#-	ar#-	ri#-	ik#-
28	P386461 obverse:5	i-	ta-	ak-	la-	an-
29	P386461 reverse:3	i-	ta-	ak-	la-	an-
30	P386478 reverse:14'	i-	sa-	an-	ni-	iq-
31	P386004 obverse:12	i-	re-	ed-	du-	u2-

10 Above, enlarged

A final approach I have played with is searching for verb-exclusive suffixes. Some suffixes are common to verbs and nouns, so not all verbal suffixes are useful. The example given here is the 3rd masculine plural dative, -šunūšim.

The screenshot shows a software interface with a search pad containing the following text:

```
word
/with/
sign
<: sign reading=szu
<: sign reading=nu
<: sign reading=szi
<: sign reading=im
/-/
```

The search results are displayed in a list with expandable nodes. The results are as follows:

ID	Reverse	Suffixes
17	P292756 obverse:16	id- na- szu- nu- szi- im
18	P292756 reverse:3	aq- bi- szu- nu- szi- im
19	P292756 reverse:7	id- na- szu#- nu#- szi- im
20	P292854 reverse:2	i- di- in- szu- nu- szi- im
21	P292854 reverse:5	i- di- in- szu- nu#- szi#- im
22	P355749 reverse:28	isz- pu- ur- szu- nu- szi- im
23	P355786 reverse:6	szu- pi2- sza- szu- nu- szi- im
24	P313304 reverse:13	i- s,i- ru- szu- nu- szi- im
25	P313315 obverse:15	[id- di- isz]- szu- nu- szi- im
26	P313390 reverse:4	ta- ad- di- nu- szu- nu- szi- im
27	P313410 obverse:14'	qi2- bi#- a- szu- nu- szi- im#
28	P345560 reverse:9	ni- iq- bi#- [szu]- nu#- szi- im- ma
29	P275092 reverse:8	szu- uk- na- ašz- szu- nu- szi- im- ma#
30	P275093 reverse:4'	te- er- szu- nu- szi- im
31	P275112 obverse:9	i- na- ad- di- nu- szu- nu- szi- im

11 Verbs with a dative suffix

The enlarged view shows the following suffixes for each result:

17	P292756 obverse:16	id- na- szu- nu- szi- im
18	P292756 reverse:3	aq- bi- szu- nu- szi- im
19	P292756 reverse:7	id- na- szu#- nu#- szi- im
20	P292854 reverse:2	i- di- in- szu- nu- szi- im
21	P292854 reverse:5	i- di- in- szu- nu#- szi#- im
22	P355749 reverse:28	isz- pu- ur- szu- nu- szi- im
23	P355786 reverse:6	szu- pi2- sza- szu- nu- szi- im
24	P313304 reverse:13	i- s,i- ru- szu- nu- szi- im
25	P313315 obverse:15	[id- di- isz]- szu- nu- szi- im
26	P313390 reverse:4	ta- ad- di- nu- szu- nu- szi- im
27	P313410 obverse:14'	qi2- bi#- a- szu- nu- szi- im#
28	P345560 reverse:9	ni- iq- bi#- [szu]- nu#- szi- im- ma
29	P275092 reverse:8	szu- uk- na- ašz- szu- nu- szi- im- ma#
30	P275093 reverse:4'	te- er- szu- nu- szi- im
31	P275112 obverse:9	i- na- ad- di- nu- szu- nu- szi- im

12 Above, enlarged

The endpoint for this line of thinking is that TF can recognize these forms even without the suffixes. Many of the verbs listed are common but irregular, thus being harder to detect using paradigm-based searches.