Exclamative sluices in Tunisian Arabic

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Sluices (Ross, 1969) are verbless utterances with a *wh*-remnant. They can be either interrogative, as in Speaker B's utterance in (1-a), or exclamative, as in (1-b).

(1) a. Speaker A: - Paul is talking to someone.
Speaker B: - Who (is Paul taking to?)?
b. What an amazing day (it is)!

Sluices have been analyzed as underlyingly sentential (Ross, 1969; Merchant, 2001), or as dialogically specified constructions (Ginzburg & Sag, 2000; Culicover & Jackendoff, 2005). Exclamative sluices have been understudied compared to interrogative ones. In a corpus study of spoken English (BNC), Ginzburg and Kim (2023) have found that: (i) Excl. sluices are more prevalent than verbal Excl. (e.g., in BNC, 82.1% sluices with *what a N!* and 67.2% with *how Adj*); (ii) Excl. sluices cannot be embedded, unlike sentential Excl. and interrogative sluices; and (iii) Excl. sluices are predominantly interpreted as exophoric and frequently lack a clear verbal paraphrase. We study sluices in Tunisian Arabic (TA) focusing on their distribution and semantic interpretation. We look at how exclamative sluices differ from full exclamative clauses, particularly regarding embedding. To answer these questions, we conducted a corpus study and two acceptability judgment experiments.

1. Corpus study We used the Tunisian Arabic Corpus (TAC) (www.tunisiya.org/) (Karen & Faiza, 2010; Younes et al., 2015), which comprises 2,449 (written and spoken) texts and 1,082,375 words, and the Spoken Tunisian Arabic Corpus (STAC) (Zribi et al., 2015). We searched for constructions with three *wh*-words; *shnowa* ('what'), equivalent of the English 'what a'+N, *qadesh* ('how much'), equivalent of the English *how*, and *malla*. As in English, the first two may be either interrogative or exclamative, while *malla* is exclusively exclamative. These exclamative words can occur either without a noun or with an adjective. We extracted 1485 tokens from the written corpus TAC, and filtered them from duplicates, interrogatives and declaratives, and 162 tokens from the spoken part of TAC and from the STAC. The written data consisted of 442 exclamatives, 14 with *shnowa*, 277 with *qadesh*, and 151 with *malla*. The spoken data consisted of 162 tokens, 135 with *shnowa*, 27 with *qadesh* and none with *malla*. We annotated whether the exclamatives are sluices or not, and whether they are root (matrix, coordinated, reported speech) or embedded, and if embedded, the factivity of the embedding predicate, following Hooper (1975)'s distinction between true factive 'worry' (TF), semi-factive 'know' (SF), and non-factive 'say' (NF) predicates. We obtain 141/442 (31.9%) sluices in the written corpus (none in the spoken ones). 42.9% of the *shnowa* occurrences were sluices, 4% with *qadesh*, and 82.1% with *malla*. The overall embedding rate for exclamatives was 15.9%, with only 5 embedded sluices, as in (2).

(2) idhaken ma hkesh aal-ina el eelem mosh lazem nahki-w aal-ihom. shouf malla eelem aad
if NEG talk.NEG on-us the media NEG must talk-1PL on-them see what media PTCL
lit. 'If the media didn't talk about us, then no need to talk about them. Look what media, seriously!'

This suggests that, as in English, embedded sluices are rare (3.5%), unlike interrogative sluices (*aya tallaa shkoun* 'Come on, guess who?'). Furthermore, 15 (22.1%) were embedded under NF predicates, which suggests that exclamatives are propositional, as suggested by Marandin (2008). We further annotated the sluices for their interpretation, following Ginzburg and Kim (2023):

- **RQUD** (Recent Question Under Discussion): The sluice is resolved using the entirety of the preceding utterance (- She lost her cat. - What a pity! (that she lost her cat)).
- **RRef** (Recent Referent): The sluice is resolved by referring to an entity or an individual in the antecedent (- John left. - What a fool!).

- **ExInf** (Exophoric/Inferential): The sluice is resolved with a non-linguistic antecedent or inferred from context (Looking at a bouquet. - How beautiful!).

Sluices with *shnowa* and *malla* had the three possible readings (RQUD example with *shnowa* in (3-a), and ExInf example with *malla* in (3-b)), while the 11 sluices with *qadesh* had a RRef reading, as in (3-c).

(3) a. [...] make-sh hashem tetbajah b-el-fased mtee-k shnowa
you.are-not embarrassed bragging with-the-corruption of-2SG what
el-waqaha [...]
the-rudeness
'You're not embarrassed bragging about your corruption! How rude!'

b. t-tetlafet hawl-ha [-] ya mimt-i malla blassa
3SG.F.look around-her VOC mom.1SG.POSS EXCLM place
'She looked around her. - What a place!

c. [...] hall-et el-beb mahla lebset-ha qadesh finou
[...] open.PST-3SG.F the-door how.beautiful outfit-3SG.F how.much elegant
'She opened the door, her outfit is beautiful! How elegant!'

As in English, the majority of exclamative sluices (with *malla*) lack a verbal antecedent and a clear verbal paraphrase. In addition, (with *malla*), exclamative sluices outnumber verbal ones, as in English.

2. Two experiments We conducted two acceptability judgment tasks to test speakers' preferences for exclamatives (with a context), one with *qadesh* and one with *malla*, comparing sluices and sentential forms, as well as the role of embedding. The experimental items followed a 2x2 design with two conditions: +/- matrix, +/- verbal. 24 items were constructed per experiment (see (4)). The embedding verbs were controlled for factivity.

(4) Speaker A:
Maram rebhet mara okhra.
maram won once again
'Maram won again.'

(a) +matrix -verbal	**(b) +matrix +verbal**
qadesh/malla mozhar-a! how.much lucky-SG.F 'How lucky!'	**qadesh/malla** mozhar-a taleet how.much lucky-SG.F turned.out ha tofla! this girl 'How lucky this girl turned out!'
(c) -matrix -verbal	**(d) -matrix +verbal**
shoft **qadesh/malla** mozhar-a! see.2SG how.much lucky-SG.F lit. 'See how lucky!'	shoft **qadesh/malla** mozhar-a see.2SG how.much lucky-SG.F taleet ha tofla! turned.out this girl 'Did you see how lucky this girl turned out!'

For experiment 1 (*qadesh*), 47 native TA speakers were recruited at the Institut Supérieur des Langues de Tunis, while 44 participants took part in experiment 2 (*malla*). They rated the second sentence of each item on a 1 to 5 scale (1 = not natural, 5 = very natural). In experiment 1, all conditions were rated as roughly equally acceptable (matrix sluice: m = 3.71; matrix verbal: m = 3.97; embedded verbal: m = 3.83), with the lowest rating for embedded sluices (m = 3.71). A Bayesian ordinal regression model shows no evidence for a difference between the predictors.

Predictors	Estimate	Est. Error	95% CrI	Post. Prob.
Intercept[1]	-3.35	0.33	[-4.02, -2.70]	1
Intercept[2]	-2.30	0.32	[-2.93, -1.67]	1
Intercept[3]	-1.13	0.31	[-1.75, -0.51]	1
Intercept[4]	0.39	0.31	[-0.22, 1.01]	0.9
Construction (Embedded)	-0.08	0.20	[-0.46, 0.31]	0.66
Form (Sluice)	-0.11	0.27	[-0.64, 0.41]	0.67
Construction x Form	-0.18	0.32	[-0.81, 0.45]	0.7

Table 1: Bayesian regression model results: Effects of CONSTRUCTION and FORM on ratings: *qadesh* exclamatives

Additionally, ratings were comparable across the three factivity types (see Table 2). The Bayesian model summarized in Table 3 shows weak evidence for the preference of embedding under TF over NF and for embedding under SF over TF. A direct comparison of SF and TF using the hypothesis test (Bürkner (2018)) (TF > SF) showed no evidence for the preference of TF ($\widehat{\beta}$ = -0.31, Est.Error = 0.63, 95% CrI = [-1.34, 0.72], Evid. Ratio = 2.3, P($\widehat{\beta} < 0$) = 0.7).

Condition	NF	SF	TF
Embedded sluices	3.54	3.95	3.67
Embedded verbal	3.63	3.84	4.02

Table 2: Mean ratings for embedded sluices and embedded verbal exclamatives across different factivity levels: *qadesh* exclamatives

Predictors	Estimate	Est. Error	95% CrI	Post. Prob.
Intercept[1]	-2.95	0.44	[-3.82, -2.11]	1
Intercept[2]	-1.85	0.42	[-2.69, -1.05]	1
Intercept[3]	-0.69	0.41	[-1.49, 0.12]	0.95
Intercept[4]	0.91	0.41	[0.10, 1.72]	0.99
Factivity (SF vs. NF)	0.47	0.56	[-0.64, 1.57]	0.81
Factivity (TF vs. NF)	0.78	0.57	[-0.33, 1.91]	0.92
Ellipsis (Sluice)	-0.28	0.43	[-1.15, 0.57]	0.75
SF x Ellipsis	0.58	0.73	[-0.87, 2.03]	0.80
TF x Ellipsis	-0.55	0.76	[-2.07, 0.94]	0.77

Table 3: Bayesian ordinal regression model: Embedded exclamative ratings by factivity and ellipsis type (*qadesh* Excl.).

In experiment 2, all conditions received comparable ratings (matrix sluice: m = 3.88; matrix verbal: m = 3.98; embedded verbal: m = 4.02), with the lowest rating for embedded sluices (m = 3.79). The model summarized in Table 4 shows no evidence for an effect.

Predictors	Estimate	Est.Error	95% CrI	Post. Prob.
Intercept[1]	-3.43	0.35	[-4.13, -2.74]	1
Intercept[2]	-2.55	0.34	[-3.23, -1.89]	1
Intercept[3]	-1.41	0.33	[-2.07, -0.76]	1
Intercept[4]	-0.11	0.33	[-0.76, 0.54]	0.63
Construction (Embedded)	-0.13	0.26	[-0.65, 0.38]	0.7
Form (Sluice)	-0.17	0.27	[-0.70, 0.38]	0.74
Construction x Form	-0.18	0.33	[-0.83, 0.47]	0.71

Table 4: Bayesian regression model results: Effects of CONSTRUCTION and FORM on ratings: *malla* exclamatives

Ratings data (see Table 5) were fitted to a Bayesian regression model (see Table 6), which shows weak evidence for a preference for embedding SF compared to NF. A directional hypothesis test comparing SF and TF showed weak evidence for the preference of SF over TF ($\widehat{\beta}$ = 0.86, Est. Error = 0.8, Evid. ratio. 6.65, 95% CrI = [-0.43, 2.17], P($\widehat{\beta} > 0$) = 0.87).

Condition	NF	SF	TF
Embedded sluices	3.56	4.04	3.8
Embedded verbal	3.79	4.26	3.98

Table 5: Mean ratings for embedded sluices and embedded verbal exclamatives across different factivity levels: *malla* exclamatives

Predictors	Estimate	Est. Error	95% CrI	Post. Prob.
Intercept[1]	-3.20	0.61	[-4.41, -2.02]	1
Intercept[2]	-2.07	0.59	[-3.23, -0.91]	1
Intercept[3]	-0.89	0.58	[-2.03, 0.26]	0.94
Intercept[4]	0.70	0.58	[-0.43, 1.86]	0.89
Factivity (SF vs. NF)	1.21	0.80	[-0.34, 2.81]	0.94
Factivity (TF vs. NF)	0.35	0.72	[-1.10, 1.77]	0.7
Ellipsis (Sluice)	-0.45	0.50	[-1.44, 0.53]	0.83
SF x Ellipsis	-0.04	0.82	[-1.65, 1.57]	0.52
TF x Ellipsis	0.40	0.83	[-1.22, 2.06]	0.69

Table 6: Bayesian ordinal regression model: Embedded exclamative ratings by factivity and ellipsis type (*malla* Excl.).

These results suggest that exclamative sluices are as acceptable as verbal exclamatives, regardless of embedding. The acceptability of embedding exclamatives under NF verbs shows that their content is not necessarily presupposed or factive.

3. A formal analysis We follow Ginzburg & Kim (2023) in analyzing exclamative sluices as non-sentential utterances with a fully propositional meaning specified by the context. We use a version of HPSG that integrates Type Theory with Records. For example, in (6), *malla* is analyzed as a determiner when occurring with a noun. The content of the NP is a property P of an exclaimable entity x that was provided in the context, the degree of which increases on a scale s thanks to the ScaleUp predication, as explained in (5). ScaleUp is a function of type $\langle\langle e,t\rangle,\langle e,t\rangle\rangle$, as it takes a property and returns a new one.

(5) ScaleUp(P)(x) iff for some δ : degree, s : Scale: P(x, δ) and High(δ, s) hold (Ginzburg & Kim, 2023, p. 20).

The *Wh* feature is a non-empty set. Ginzburg and Sag (2000) introduced this feature to track the distribution of *wh*-phrases. This is also particularly useful to accommodate for non-*wh*-exclamatives, such as exclamatives with intensive words (e.g., *such*, and the construction *ma* + adjective in TA as in *mahleha* 'How beautiful she is!'), where the *wh* feature is assigned an empty set.

(6)

$$\left[\begin{array}{ll} \textsc{phon} : \text{malla} & \\ \textsc{syn} : & \left[\begin{array}{ll} \textsc{cat} = \textsc{det} : \textsc{PoS} & \\ \textsc{select} : & \left[\begin{array}{l} \textsc{cat} = \text{N} : \textsc{PoS} \\ \textsc{Cont} : \text{P}(\text{x}) \\ \textsc{wh} = \{\textsc{cont}\}\text{: Set}(\text{semObj}) \end{array}\right] \\ \textsc{Cont} = \textsc{ScaleUp}\ (\text{P})(\text{x}) & \end{array}\right] \end{array}\right]$$

(7) is an analysis of an exclamative sluice, which is a verbal fragment (Head v) with an NP daughter (no invisible verb). This NP is made of *malla* selecting for the N *blassa* ('place'), the content of which is retrieved from the context (DialogGameBoard).

(7)

$$\begin{bmatrix} \text{PHON} : \text{malla blassa} \\ \text{SYN} : \begin{bmatrix} \text{CAT} = \text{NP} : \text{PoS} \\ \text{WH} = \{\text{ScaleUp}\} : \text{set(SemObj)} \end{bmatrix} \\ \text{CONT} = \text{ScaleUp(P)} : \text{IV} \end{bmatrix}$$

$$\text{det-dtr:} \begin{bmatrix} \text{PHON} : \text{malla} \\ \text{SYN} : \begin{bmatrix} \text{CAT.HEAD} = \text{det} : \text{PoS} \\ \text{SELECT} : \begin{bmatrix} \text{CAT} : \text{N} \\ \text{CONT} : \text{IV} \end{bmatrix} \\ \text{CONT} = \text{ScaleUp} : \text{(IV)IV} \end{bmatrix} \end{bmatrix} \qquad \text{hd-dtr:} \begin{bmatrix} \text{PHON} : \text{blassa} \\ \text{CAT.HEAD} = \text{N} : \text{PoS} \\ \text{CONT} = \text{P} : \text{IV} \end{bmatrix}$$

As illocutionary acts, exclamatives perform a dialogue move of exclaiming, which updates the DGB and triggers scalar emotional intensity (*arousal*), evaluated as either positive or negative measured via *appraisal*. We show a simplified example of how to incorporate this in the analysis of an exclamative sluice. In (8), *malla blassa* ('What a place!') expresses a positive appraisal of a place's beauty.

(8)

$$\begin{bmatrix} \text{SYN} : & \left[\text{CAT} = \text{v} : \text{PoS}\right] \\ \text{DGB-PARAMS} : & \begin{bmatrix} \text{z} : \text{Ind} \\ \text{c1} : \text{exclaimable(z)} \\ \text{c2} : \text{arousal(z, high)} \\ \text{c3} : \text{appraisal(z, positive)} \end{bmatrix} \\ \text{CONT} = & \left[\text{c4} : \text{ScaleUp(blassa)(z)}\right] : \text{Prop} \end{bmatrix}$$

$$\Big|$$

$$\text{hd-dtr} : \begin{bmatrix} \text{PHON} : \text{malla blassa} \\ \text{SYN} : \text{CAT} = \text{NP} \\ \text{CONT} = \lambda x[\text{c4} : \text{ScaleUp(blassa)(x)}] : \text{IV} \end{bmatrix}$$

Malla, *qadesh*, and *shnowa* can also select for an adjective, where they are analyzed as adverbs (see the analysis of *qadesh* in (9)).

(9)

$$\begin{bmatrix} \text{PHON} : \text{qadesh} \\ \text{SYN} : \begin{bmatrix} \text{CAT} = \text{ADV} : \text{PoS} \\ \text{SELECT} : \begin{bmatrix} \text{CAT} = \text{Adj} : \text{PoS} \\ \text{Cont} : \text{P(x)} \\ \text{WH} = \{\text{CONT}\} : \text{Set(semObj)} \end{bmatrix} \\ \text{Cont} = \text{ScaleUp (P)(x)} \end{bmatrix} \end{bmatrix}$$

Conclusions

Our corpus study showed a high rate of sluicing (with *malla*), a low rate of embedded sluices, the possibility to embed exclamatives under NF verbs, and a high rate of exophoric reading, as in English exclamative sluices (Ginzburg & Kim, 2023). The experiments showed no penalty for the use of exclamative sluices and that exclamatives may be embedded under NF verbs, confirming their denotation as propositions rather than facts (cf Marandin, 2008; pace Ginzburg & Sag, 2000; Zanuttini & Portner, 2003). This exophoric potential is one key difference with interrogative sluices, where such readings are relatively rare.

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