

The linguistics of odour in Semaq Beri and Semelai, two Austroasiatic languages of the Malay Peninsula

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There is a long history presuming smell is not expressible in language, but numerous studies in recent years challenge this presupposition. Large smell lexica have been reported around the world thereby showing high *lexical codability* in this domain. Psycholinguistic studies likewise find smell can be described with relatively high agreement, demonstrating high *efficient codability*. Often the two go hand-in-hand: languages with high lexical codability also display high efficient codability. This study compares two Austroasiatic (Aslian) languages – Semaq Beri and Semelai – previously shown to diverge in their efficient codability for smell: Semaq Beri showed relatively high efficient codability, whereas Semelai did not. Despite this, we demonstrate that both languages have high lexical codability, i.e., large lexica of basic smell terms. This seems to be a feature of the Aslian language family, suggesting a long-standing preoccupation with odours. More generally, the dissociation between lexical and efficient codability suggests a more nuanced approach towards linguistic expressibility is necessary.

Keywords: olfaction, Aslian languages, olfactory language, basic smell terms, morphosyntax, semantics

1. Introduction

The general paucity of dedicated, abstract odour terminology in modern European languages, coupled with a hierarchical view of the senses dating back to the Greek philosophers has long blinkered Western researchers from investigating olfactory language in any great detail. However, over the last two decades there has been a surge of interest in the topic of olfaction across disciplines, including anthropology (e.g., Classen et al. 1994), neuroscience and psychology (e.g.,

McGann 2017; Yeshurun & Sobel 2010; Olofsson & Gottfried 2015), and linguistics (e.g., Majid 2021a; Jędrzejowski & Staniewski 2021).

Notable in this emerging literature, several studies of Aslian languages (Austroasiatic, Malay Peninsula) have shown that odour is indeed expressible in language, with accounts of dedicated olfactory lexicons for odour qualities in Jahai (Burenhult & Majid 2011; Majid & Burenhult 2014), Maniq (Wnuk & Majid 2014), and Semai (Tufvesson 2011). That is, these languages have high lexical codability for this domain (Levinson & Majid 2014). In fact, the presence of dedicated olfactory language in Aslian languages was first noted in anthropological accounts even earlier (e.g., Dentan 1965 for Semai; Endicott 1979 for Batek, and Gianno 1990 for Semelai). Both Jahai and Maniq have been shown to have basic smell terms. The notion of “basic term” has its history in the colour literature (cf. Berlin & Kay 1969), but within the olfactory literature it has been used to identify forms that are used to refer to odour qualities (i.e., not multimodal sensory experiences), through monolexemic terms that do not refer to a source object. The terms should also be psychologically salient (i.e., known by the whole speech community) and not restricted to a certain genre or register (see, e.g., Burenhult & Majid 2011; Majid 2021a). Based on these criteria, Jahai has 12 basic smell terms (Burenhult & Majid 2011), and Maniq has 15 dedicated smell terms (that apply to smell qualities and not sources), of which 10 are also monomorphemic (Wnuk & Majid 2014).¹

In one study, Majid & Burenhult (2014) compared odour naming between Jahai speakers and American English speakers in a psycholinguistic experiment. They found Jahai speakers showed higher agreement in how they described odours than their age- and gender-matched English-speaking counterparts, even though the odours were familiar to the American participants. Indeed, not only do Jahai speakers show more consensus in how they describe odours, they also give more concise odour descriptions and are faster to name odours than comparable Dutch speakers (Majid et al. 2018). That is, not only does Jahai show high lexical codability, it also has high efficient codability too (Levinson & Majid 2014). Taken together these studies suggest that Aslian communities are particularly interesting to study in-depth for their linguistic encoding of smell.

In a recent study Majid & Kruspe (2018) uncovered a more complex picture with variation between related Aslian languages. They conducted an experimental task comparing odour and colour naming between Semaq Beri and Semelai speakers and found that while Semaq Beri speakers showed relatively high agreement in odour naming, Semelai speakers did not. Here we present novel data to

1. Wnuk (2016: 203) suggests there may be two additional smell terms making the total 17 in Maniq.

illustrate that Semelai and Semaq Beri have comparably rich linguistic resources for talking about odour.

The Aslian languages consist of three main sub-branches (Northern, Central, Southern), and the isolate Jah-Hut (Dunn et al. 2011). Semaq Beri (ISO 639-3:szc) and Semelai (ISO 639-3:sza) belong to the Southern sub-branch and, although closely related, they are not mutually intelligible. The two focal groups live in far-flung areas of the peninsula: the Semaq Beri in the northeast and the Semelai in the central southwest, and neither group has direct knowledge of the other. In both communities, people are bilingual to varying degrees in the majority language Malay (Austronesian). In addition, many of the Semaq Beri in the community under study speak varieties of Batek (Northern Aslian). Neither the Semaq Beri nor Semelai languages are written.

Both groups live in resettlement villages – the total population for Semaq Beri is around 2500, and for Semelai around 5000. Traditionally, they practiced different subsistence modes – the Semaq Beri were mobile hunter-gatherers, a subsistence mode generally considered atypical of Southern Aslian speakers (Benjamin 1985; Burenhult et al. 2011); the Semelai combined swidden rice cultivation with the collection of forest-products for trade. They differ accordingly in the attendant socio-cultural traditions associated with these subsistence modes, but common to both is a pre-occupation with the sensory domain of olfaction in their respective religions.

In this paper we present an outline of the general frame of sensory perception verbs in Semaq Beri and Semelai (Section 2), before turning to detailed descriptions of the formal properties of odour quality terms (Section 3) and a discussion of their semantics (Section 4). In Section 5 we present contextualized illustrations of the usage of olfactory language in natural discourse. We conclude with a discussion of Semaq Beri and Semelai odour language in broader context.

2. Preliminaries to sensory perception in Semaq Beri and Semelai

In order to situate the dedicated olfactory terminology of Semaq Beri and Semelai within the larger framework of the language of perception, the basic perception verb paradigms are presented for each language (Section 2.1.1 and Section 2.1.2), followed by a general summary (Section 2.1.3).

2.1 Verbs of perception

The basic perception verb paradigms of Semaq Beri and Semelai are presented following Viberg’s (1984) typological study of the lexicalization patterns of perception verbs. The five sense modalities are categorized according to two event-types, where either the perceiver or the percept is encoded as subject. The former type distinguishes two frames depending on whether the perceiver is encoded as the experiencer of an uncontrolled event (EXPERIENCE, e.g., ‘to hear’) or the agent of a controlled event (ACTIVITY, e.g., ‘to listen’). The percept is encoded as the object. The latter type, the SOURCE or “copulative”, casts the percept as subject, either omits the perceiver or includes it as an adjunct (‘It sounds X (to me)’).²

2.1.1 Perception verbs in Semaq Beri

Semaq Beri has basic perception verbs for ACTIVITY and EXPERIENCE for four of the five sense modalities; there is no basic ACTIVITY verb for TOUCH (Table1).

Table 1. Perception verbs in Semaq Beri

	EXPERIENCE	ACTIVITY	*SOURCE
SEE	daʔye / ʔye ³	nɔ̃t	nɔ̃t
HEAR	daʔyəŋ / ʔyəŋ	biŋliŋ	biŋliŋ
TOUCH	hamɔ̃ʔ	–	–
TASTE		sɔʔ	sɔʔ
SMELL	sem	ʔũŋ	ʔũŋ

The distinction made between ACTIVITY and EXPERIENCE perception verbs is illustrated with the controlled olfactory perception verb ʔũŋ ‘to sniff’ in Example (1), and the uncontrolled verb *sem* ‘to smell’ in examples (1) and (2).

2. Note, Viberg (2019) refers to these as PHENOMENON-based verbs instead of SOURCE-based and makes further distinctions of “perceptibility verbs” and “sensory verbs”. We do not address these distinctions here.

3. *daʔye / ʔye* and *daʔyəŋ / ʔyəŋ* appear to be dialectal variants. The orthography is phonemic with the following exceptions: /j/ is represented as *j*, /j/ as *y*, and /ɛ/ as *s*. Semaq Beri has a contrast between the mid low vowel /a/ and low back rounded /ɑ/ that is lost when italicized. To differentiate, the back vowel /ɑ/ is represented here as *v*. In Semelai, *v* is the low unrounded vowel /ɒ/ and italicized *a* is /a/.

- (1) *ʔəŋ ʔũŋ, ʔəŋ beh n=sem*
 1SG sniff 1SG NEG 1SG=smell
 ‘I’m sniffing, (but) I can’t smell (it).’⁴
- (2) *he sem ŋõy boŋã? ke*
 1INCL smell far flower 3SG
 ‘We smell its flowers from afar.’

In the EXPERIENCE type, Semaq Beri collapses two sensory modalities – TOUCH and TASTE – to a single term *hamõ?* ‘to feel, taste’. Some speakers also employ *hamõ?* for SMELL as shown in Example (3).⁵

- (3) *tapi? ke, he lɔc ʔala? nsac tə? ja? mɔk plyã? wel ke hamõ?*
 but 3SG 1INCL PERF taboo flesh that then like smell.blood too 3SG smell
d=ke
 FOC=3SG
 ‘But it (=the tiger), (if) we have (broken) the flesh taboo, then it smells (us) as bloody-smelling.’

The verb *hamõ?* also expresses the sixth sense, proprioception, as in *he hamõ? brgək* (1INCL feel hungry) ‘We feel hungry.’

Viberg’s third event-type, the SOURCE-based ‘copulative’ which encodes the source as subject and either excludes the perceiver or encodes it as an adjunct has no equivalent means of expression in Semaq Beri. Dynamic verbs, the class to which perception verbs belong, require either an agent or experiencer as the thematic role of the subject. Therefore, the perception of sensory qualia can only be expressed as an event with a perceiver as subject and the perceived qualia expressed with a stative sensory descriptor verb in a complement clause. This is illustrated in Example (4) with the olfactory perception verb *ʔũŋ* ‘to sniff’ and the odour description verb *mahon* ‘to be noxious-smelling’ in the complement clause.

- (4) *mahon kʰləm ke tə? he ʔũŋ [mahon tə?]*
 smell.noxious odour 3SG that 1INCL sniff smell.noxious that
 ‘That one’s odour is noxious. ‘We smell that noxious / It smells noxious.’

4. All examples are drawn from Kruspe’s own data, which are archived at The Language Archive (Semaq Beri, <https://hdl.handle.net/1839/00-0000-0000-0010-1233-9>) and RWAAI (Semaq Beri, <https://hdl.handle.net/10050/00-0000-0000-0003-67Bo-B> and Semelai <https://hdl.handle.net/10050/00-0000-0000-0003-671C-C>).

5. In example sentences multisense verbs like *hamõ?* are glossed according to context.

The verb *jɔɔy* ‘to make, do’ is used to describe generic or inherent features or qualities of flora, fauna, and other natural entities. The subject is construed as an agent that ‘manifests’ its own attributes,⁶ e.g., *kɛ jɔɔy sala* (3SG make leaf) ‘It has leaves’, literally ‘It makes leaves’. When sensory quality verbs occur in the complement, the clause can be construed as a SOURCE-type construction, as shown in (5).

- (5) *kɛ jɔɔy cʰɨ̃s nh-roh gayit*
 3SG make smell.earthy NMZ-finished large.feline
 ‘All large felines smell earthy.’

No perceiver is implicit in this clause-type; it is only expressible periphrastically in an independent statement with a perception verb: *hantoʔ jriʔ kɛ jɔɔy bl<t>het. he n̄t bl<t>het* (ghost fig.tree 3SG make black <MOT> 1INCL look black<MOT>) ‘The fig-tree ghost is black and moves. We see it black and moving/It looks black and moves.’ The SOURCE-event types described here do not have the evaluative or impressionistic inferences of English sensory copulars.

Semaq Beri ACTIVITY perception verbs have a unique hortative marker *cɛn* ‘HORT’ used to urge someone to engage their senses, as shown in (6).

- (6) *ʔɨ̃n cɛn! rɔm bəh?*
 sniff HORT fragrant Q
 ‘Sniff (it)! Is it fragrant, or not?’

Verbs like *tpəʔ* ‘to touch with the hand’ and *cam* ‘to seek’ can also occur in this construction, for example, *ʔəɲ ham̄əʔ ʔay. ʔen tpəʔ cɛn wel!* (1SG feel thing come touch.with.hand HORT too) ‘I felt something. Come and touch it too!’ attesting to the implicit sensory engagement in these activities. A verb such as *jɔɔh* ‘to drink’ is incompatible with this construction, **jɔɔh cɛn!* (drink HORT) ‘Drink (it)!’ and requires the presence of a perception verb: *jɔɔh, sɔʔ cɛn! s̄d̄ic bəh? bʰɔɲ kh̄ɔɲ han̄ɛh.* (drink taste HORT tasteless Q afraid too.salty FUT:PROX) ‘Drink and taste (it)! Is it tasteless, or not? (I’m) afraid it will be too salty.’

Cɛn appears to be related to the visual activity verb *cɛn* ‘to look at’, attested in a southern Semaq Beri variety, but not in our variety, where the verb is *n̄t* ‘to look at’ (Table 1).

2.1.2 Perception verbs in Semelai

Semelai has basic verbs that distinguish the controlled act of perception from the uncontrolled act for all sensory modalities other than TACTILE mode, for which there is no term (Table 2).

6. Similar constructions are noted for locative descriptions of flora and fauna: *kʰom* ‘to sit’ is used for static location and *kɔy* ‘to follow’ for spatial or temporal distribution.

Table 2. Perception verbs in Semelai

	EXPERIENCE	ACTIVITY	*SOURCE
SEE	ʔye	jɨɔʔ	(br-ye)
HEAR	ʔyən	trɔɔʔ	(br-ʔyən)
TOUCH	ɲam	–	(br-ɲam)
TASTE		rasaʔ	
SMELL		jhɔn	

Examples (7)–(8) below illustrate the two event types in the olfactory mode.

- (7) The speaker describes the response of fish to the wrong kind of bait:

de=jhɔn la=creh de=paloh

3PLA=sniff A=fish 3PLA=flee

‘The fish sniff (it) (and) they flee.’

- (8) *ki=ɲam k^hləm deh*

3SGA=smell odour 3PL

‘He smelt their odour.’

In the EXPERIENCE event-type, Semelai collapses three sensory modalities – TOUCH, TASTE, and SMELL – to a single term *ɲam* ‘to touch, taste, smell’. The sensory modes may be differentiated by the inclusion of the abstract term like *k^hləm* ‘odour’ for olfactory perception as in Example (9), the perceptory organ as illustrated in the folk definition for the verb *ɲam* in Example (10), or a verb expressing the perceptual quality as in Example (11) below.

- (9) The speaker expresses her inability to perceive odours:

ʔən daʔ ɲm-ɲam k^hləm

1SG NEG IMPERF-smell odour

‘I don’t smell odours.’

- (10) *hɛ=ɲam ʔen muh, ʔen mɔɔt, ʔen kbəʔ*

1INCLA=smell LOC nose LOC mouth LOC body

‘We smell in our noses, (taste) in our mouths, (feel) in our bodies’

The additional sense of proprioception is also expressed with *ɲam* as shown in Example (11).

- (11) *ʔen bri ma=ɲam pret*

LOC forest IRR=feel hot

‘In the forest one feels hot.’

There are no sensory copular verbs that fit Viberg's (1984) SOURCE-type. Moreover, there are culture-specific restrictions on the types of information or knowledge that can be attained through perception that exclude evaluative or impressionistic inferences. Detransitivized EXPERIENCE perception verbs may occur in a clause where the SOURCE is the single argument and the perceiver is omitted (Kruspe 2004a: 119), but this expresses potential perceptibility and lacks an implicit perceiver, e.g., *br-yəŋ tmay_doy* (MID-hear dusk) 'They are audible at dusk'.

2.1.3 Summary

Both Semaq Beri and Semelai distinguish ACTIVITY from EXPERIENCE with unique monolexemic verbs for all perceptual modalities, other than TOUCH. Neither language has a basic verb 'to feel' for the controlled act of feeling.⁷ There are a range of specific ACTIVITY verbs meaning 'to grasp; to hold', or 'to make contact/probe (with a specific body part/in a specific manner for stg.)'. In extended discussions with consultants, it was concluded that contact is the primary meaning of these verbs, while the tactile response of feeling is an inferred aspect of the event. It appears to be this feature that allows controlled verbs of touch to occur in the "sensory" hortative in Semaq Beri, see Section 2.1.1. It is difficult to construe any of the contact verbs as a core perception verb for this modality, and in the current analysis we concur with Viberg (1984) in excluding them.

In addition to Viberg's 'basic' perception verbs, there are also numerous hyponyms, like the ACTIVITY verbs *blɔy* 'to look upwards' (Semaq Beri; Semelai), *hrdik* 'to look about for (stg)' and *darnɛŋ* 'to listen for (stg)' (Semelai), and EXPERIENCE verbs, like *haŋɔp* 'to scent a wafting odour' (Semaq Beri).

Neither Semaq Beri nor Semelai have unique verbs or constructions corresponding specifically to the SOURCE event-type. In Semaq Beri, controlled perception verbs with the percept encoded as a complement may be construed with a sensory copular reading (Section 2.1.1); Semelai has no equivalent (Section 2.1.2).

Viberg (1984) proposed a unidirectional hierarchy of semantic extension across the senses – VISION > HEARING > TOUCH > TASTE = SMELL.⁸ Intrafield extensions are observed in both Semaq Beri (Table 1) and Semelai (Table 2). In Semelai the three lower modalities in the EXPERIENCE event type – TOUCH, TASTE, and SMELL – are conflated to a single verb. In Semaq Beri TOUCH and TASTE are

7. Interestingly, this gap is attested in the four Aslian languages for which we have detailed first-hand knowledge, and in Maniq (Wnuk 2016). Given the limited data available, it is an open question if this is typical for Aslian languages.

8. A revised version of the hierarchy leaves the ordering of TOUCH, TASTE, and SMELL open: VISION > HEARING > (TOUCH, TASTE, SMELL) (Viberg 2019, 20).

conflated; moreover, *hamō?* appears to be extending to include SMELL, mirroring the situation in Semelai. Although some of the perception verbs cut across sense modalities in both languages, as we will see, the related verbs which describe sensory qualia never do: for example, odour and taste terms are mutually exclusive, and in both languages we see unique sets of terms for the two domains.

The question of transfield extensions of perception verbs into other semantic domains, like cognition (e.g., Evans & Wilkins 2000; San Roque et al. 2018; Sweetser 1990; Vanhove 2008), is beyond the purview of our study, but in general, perception verbs do not exhibit polysemies in either language examined here. Possible exceptions in need of further investigation are noted for Semaq Beri: the EXPERIENTIAL verb *sem* ‘to smell’ also means ‘to remember, to recall’, as elucidated in the folk-definition in (12) and Example (13),⁹ and the ACTIVITY verb *sə?* ‘to taste’ also means ‘to have experience (of stg)’ as in *he? sə? daŋāw ʔəŋ wel* (2M experience hut 1SG too) ‘You’ve experienced my hut too’.

- (12) The heart (*gnōs*) is where knowledge resides:

hε sem ha? gnōs hε; ha? mūh hε sem kʰlām kε
 1INCL remember LOC heart 1INCL LOC nose 1INCL smell odour 3SG
 ‘We remember it in our hearts; in our nose we smell its odour.’

- (13) A speaker has been naming forest fruits that are edible when ripe:

bwəh ʔəŋ sem lvc, bwəh tə? nēŋ
 edible.ripe.fruit 1SG remember PERF edible.ripe.fruit that PST:PROX
 ‘The fruits I remember are the fruits (I’ve named) just now.’

Before turning to a discussion of odour quality verbs, it should be noted that Semaq Beri and Semelai share a common indigenous abstract nominal term *kʰlām* ‘odour’ that is formally unrelated to either odour perception or odour quality verbs. This is a neutral term and has no inherently negative inference in either language. This contrasts with the negative default of the English terms (‘to smell’, ‘smelly’), which is thought to be representative of a more general phenomenon (Allan & Burridge 2006: 200; Krifka 2010; Viberg 1984).¹⁰

To have an odour is expressed with the verbalizing possessive derivation *b-kʰlām* (HAVE-odour) as in *jadi? kəh b-kʰlām* (so 3SG HAVE-odour) ‘So then it has an odour’ (Semelai). To emit an odour is expressed by the derived intransitive verb *kʰ<m>lām*, as in *kʰ<m>lām ʔen* (odour<VRB> just) ‘It just smells (neither offensively or inoffensively)’ or *mə=kʰ<m>lām* (REL=odour<VRB>) ‘the one that

9. See also Luwo (Nilotic; Sudan) for the conflation of ‘smell’ and ‘know’ (Storch 2014).

10. Viberg (1984) notes 52 of the 53 languages he studied showed this tendency (i.e., a default negative interpretation). Polish was the only exception in his sample: the main smell verb did not imply a negative smell, but a positive smell instead.

gives off a smell' the avoidance term for traditional hill rice, which is typically fragrant (Semelai).¹¹

One additional feature warrants remark before turning to the dedicated vocabulary for odours. Distinctions in the non-visual perceptual modalities are also encoded in demonstratives. Both Semaq Beri and Semelai have a dedicated demonstrative that gives speakers the option of indicating that a referent is perceived through one of the non-visual modalities – *hnē?* (Semaq Beri) and *nene* (Semelai) 'that:NVIS'. As Burenhult notes for the related Aslian language Jahai, these perceptual demonstratives do not function as markers of evidentiality (Burenhult 2018). The single terms neutralize the regular categorial distinctions made for demonstratives in the respective languages. Similar demonstratives are also noted for the Aslian languages Mah Meri (Kruspe 2010) and Ceq Wong (Kruspe fieldnotes). To illustrate, olfactory examples are provided for Semaq Beri and Semelai in examples (14)–(15) respectively.

- (14) *k^hləm pgus hnē?*

odour musty that:NVIS

'That (is) a musty odour.'

- (15) *mandehməh mə=rhom nene?*

what REL=fragrant that:NVIS

'What is that that's fragrant?'

3. Odour quality terms

Semaq Beri and Semelai have impressive lexicons of abstract odour quality terms (Table 3; see also Table 4 and Table 5). Semaq Beri has 19 distinct terms, comparable with what has been reported for the Northern Aslian languages. Impressively – and in direct contrast to the picture painted by the difficulty Semelai speakers had in talking about odours in an experimental setting (cf. Majid & Kruspe 2018) – Semelai has an exceptionally rich set of 24 odour terms. The odour quality terms belong primarily to the word class of stative intransitive property verbs, a feature consistent with the areal profile of Mainland and Island South-east Asia where adjectival concepts are typically encoded as verbs (see Dixon & Aikhenvald 2004; Stassen 2013).

11. Intriguingly, Mitchell (2015) notes that in Datooga the verb *wiiny* 'smell (of)' is also used to describe the relationship between words (e.g., if a word is derived of another or is a homophone, it is said to "smell of" the other) which is relevant for the avoidance register (where specific names, lexemes, and near-homophones are avoided).

The majority of terms listed were obtained during the extensive ongoing field-work of Kruspe: Semelai data were collected over a period from 1990–2019 and Semaq Beri data from 2001–2018. In addition, several previously unknown terms arose through discussions around odour as a result of a systematic odour language elicitation task (Majid & Kruspe 2018; see Section 1).

It is challenging to gloss the odour terms precisely given the difficulties in determining their focal quality, and because the majority of distinctions are not lexicalised in English. The current glosses should therefore be considered approximate. All of the terms should be understood as being specific to odour: the gloss ‘be pungent’, for example, as used here should not be construed as the equivalent of English pungent, which is also a taste term.¹²

Table 3. Semaq Beri and Semelai odour terms

Semaq Beri	Semelai
<i>rʔom</i> ‘be fragrant’	<i>rhom</i> ‘be fragrant’
<i>sʔāt</i> ‘be putrid’	<i>sʔīt</i> ‘be putrid’
<i>sʔīt</i> ‘be disgustingly putrid, fetid’	<i>crus</i> ‘be disgustingly putrid, fetid’
<i>cʰŋʒs</i> ‘be aromatic’	<i>cʰŋʒs</i> ‘be aromatic’
<i>ʔisak</i> ‘be acrid’	<i>haŋet</i> ‘be acrid’
<i>cʰŋīs</i> ‘be earthy-smelling’ (<M) ^a	<i>cʰŋes</i> ‘be faintly smoky-smelling’
<i>cʰŋās</i> ‘be pungent’	<i>cʰŋis</i> ‘be pungent’ (<M)
<i>cʰŋūs</i> ‘be fragrant (ripe fruit)’	<i>cʰŋas</i> ‘be strongly balsamic’
<i>cʔak</i> ‘to have a smell of roasting, or charring’	<i>cŋɔl</i> ‘be pleasantly smoky-smelling’
<i>praʔāt</i> ^b ‘to have a smell of urine’	<i>cʰŋir</i> ‘to have a smell of urine’
<i>pgus</i> ‘be musty, mouldy-smelling’	<i>mʔʒs</i> ‘be musty, mouldy-smelling’
<i>plyāʔ</i> ‘be bloody- or raw-smelling’	<i>plēŋ</i> ‘be fishy-smelling’
<i>hapak</i> ‘be sweaty-smelling’ (<M)	<i>kʰlɛm</i> ‘odour of underarm sweat’
	<i>symɔy</i>
<i>haŋēr</i> ^c ‘be raw- or bloody-smelling’ (<M)	<i>hayīr</i> ‘be raw- or bloody-smelling’ (<M)
<i>santen</i> ‘to have the smell of death’	<i>hamis</i> ‘be bloody-smelling’ (<M)
<i>mahoŋ</i> ‘be noxiously foul-smelling’ (<M)	<i>mawōŋ</i> ‘be noxious-smelling’ (<M)
<i>prʔāt</i> ‘be spoilt-smelling’	<i>jʔɔp</i> ‘be sour, spoilt-smelling’
<i>sʔūr</i> ‘be sour, stale-smelling’	<i>ptūt</i> ‘to smell earthy or of vegetal decay’

12. See the Oxford English Dictionary: <http://www.oed.com/view/Entry/154658?redirectedFrom=pungent#eid> Accessed 20190318.

Table 3. (continued)

Semaq Beri	Semelai
<i>waŋi</i> ‘to smell of perfume’ (<M)	<i>rmŋas</i> ‘to have an intense wafting balsamic odour’
	<i>dmarom</i> ‘to have a wafting floral fragrance’
	<i>dmkār</i> ‘to have a wafting balsamic or floral odour’
	<i>raŋhēŋ</i> ‘to have a wafting, chokingly putrid odour’
	<i>hancēŋ</i> ‘to have a stale urine odour’ (<M)
	<i>waŋi</i> ‘to smell of perfume’ (<M)

- a. (<M) indicates a borrowing from Malay.
- b. This term could be derived from *prʔāt*, however given its narrow reference it is treated as a unique term.
- c. Some speakers reject this term as a Malay word and say that the Semaq Beri term is *plyāʔ*.

A comparison of the terms in Table 3 reveals the two languages share numerous cognate odour terms like *rʔom* (Semaq Beri) and *rhom* ‘be fragrant’ (Semelai), and *sʔit* ‘be fetid’ (Semaq Beri), ‘be putrid’ (Semelai). In addition, there are terms that appear to be formally – if not semantically related – like *cʰŋās* ‘be pungent’ and *cʰŋās* ‘be aromatic’ (Semaq Beri), which we take up in Section 6. Both languages also have borrowings from Malay, for example, Semaq Beri *hapak* from *apak* ‘to smell musty, sweaty’, and Semelai *hamis* from (*h*)*amis* ‘to smell rank, fishy’ (Wilkinson 1932).

3.1 Formal characteristics of odour quality terms

Odour quality terms in Semaq Beri and Semelai generally conform to the typical language specific morphological and syntactic criteria associated with the subclass of stative intransitive verbs that typically denote adjectival concepts. Odour qualities are usually expressed predicatively; the subject encodes the referent to which the odour quality is attributed. We outline the formal characteristics of odour terms, beginning with Semaq Beri in Section 3.1.1, before moving on to Semelai in Section 3.1.2.

3.1.1 Semaq Beri odour quality terms

Odour quality terms in Semaq Beri belong without exception to the class of stative verbs. The primary classification of verbs is into stative and dynamic sub-

classes; stative verbs typically denote adjectival properties, including colour, physical property, and value (Kruspe 2014: 505).

Stative verbs feed several morphological processes, although consistent with the profile of the language, there are fewer available compared to dynamic verbs (Kruspe 2014). Stative verbs are distinguished formally from dynamic verbs by their inability to be nominalized. The most frequently attested derivation is the imperfective (IMPERF), which is used in the formation of the negative see examples (16) and (20) below.

- (16) *beh ke c^h<s>ŋũs*
 NEG:exist 3SG smell.ripe.fruit<IMPERF>
 ‘(It) doesn’t smell of ripe fruit.’

There are two infixes that occur with odour verbs to express degree of intensity: the augmentative <raʔ> (AUG) signifying increased intensity, and <rC> (DIM) – where C is a reduplicant of the final consonant of the word – expressing reduced intensity. For example, *p<raʔ>gus* (musty<AUG>) ‘very musty’ from *pgus* ‘be musty’ and *s<rt>ʔit* (fetid<DIM>) ‘a bit fetid’ from *sʔit* ‘be fetid’. The augmentative derivation is noted generally for stative property verbs, as in *b<raʔ>yek* (good<AUG>) ‘very good’ from *bayek* ‘be good’ or *praʔgēh* ‘very big’ from *pagh* ‘be big’; but the latter derivation has only been noted with odour verbs to date and potentially distinguishes them from other stative property verbs.¹³

Although there is a morphological causative <aN> ‘CAUS’ available to stative verbs, e.g., *g<an>hēt* ‘to sweeten’ from *ghēt* ‘to be sweet’, it has not been noted for odour verbs. They appear instead in the periphrastic causative construction *ʔāŋ* ‘to carry’ + V, e.g., *beh ja paʔraʔ neŋ. ja ʔāŋ sʔūr wel* (NEG 2F.SG smoke PST:PROX. 2F.SG carry smell.stale too) ‘You didn’t smoke (the meat) before. You’ve let it go stale-smelling’.

Odour verbs are primarily used predicatively. The source of the odour is expressed as the single argument of the verb. There is no formal marking of the subject (Kruspe 2014: 488), which is optionally represented by an overt NP either before or after the verb, as in examples (17–19).

- (17) *prʔāt*
 smell.spoilt
 ‘(It) is spoilt-smelling’.

13. The affixes <raʔ> and <rC> are adverbial modifiers that express gradience (not smell quality) when infixed into a stative property verb of odour. This is quite different from the grammaticalization of odour in Chapala (Floyd et al. 2018), where a classifier transforms a set of unclassified roots into odour verbs, or in Nisg’a where a smell prefix can be added to any noun to generate an odour verb (Tarpent 1987; see also Majid 2021a for related examples).

- (18) Describing the odour of a kind of resinous incense:

ny-guy kɛ cʰɨ̃s

NMZ-waft 3SG smell.earthy

'Its smoke is earthy-smelling.'

- (19) *rʔom nh-roh gi təʔ*

fragrant NMZ-finished 3PL that

'All of them are fragrant.'

Odour quality predicates exhibit the regular pattern of verbal negation: the negated verb in the imperfective form is a complement of the negative existential verb *beh* 'to not exist'.

- (20) *beh kɛ s<t>ʔāt mlkɛl*

NEG:exist 3SG putrid<IMPERF> tuber_k.o

'*Mlkɛl* tubers, they aren't putrid-smelling.'

Odour verbs take semantically compatible aspectual modifiers like *dɔl* 'still' and perfective *lɔc* as in (21).

- (21) *mɔ̃k təʔ lah, lɔc sʔāt*

like that EM PERF putrid

'Like that, (it) is already putrid-smelling.'

Distinctions in gradience can also be achieved periphrastically in addition to the morphological processes described above. Adverbial modifiers of degree include *kwɔt* 'be strong' to express intensity as in (22), *ʔamāt* 'very', and *kanēt* 'be little, few' to express low degree as in *plyāʔ kanēt* 'to be a little raw-smelling', and comparative *lbeh* 'be more', see (22); *btol* 'be correct, true' encodes the concept of a prototypical quality. All of the adverbial modifiers, apart from *kanēt*, are Malay loans.

- (22) *sʔāt kwɔt di=hnēʔ; sʔāt lbeh*

putrid strong FOC=that:NVIS putrid more

'(It) was intensely putrid that one; (it) was more than putrid.'

Incomplete or unachieved states that are not deemed a true exemplar of a particular quality are expressed with the indigenous verb *gar* 'to want', as in *kɛ kurɔŋ kɛ gar rʔom* (3SG less 3SG want fragrant) 'It is less fragrant-like', or with the Malay loan *ʔakan* (from *akan* 'intend to; will') as in *ʔakan cʰ<s>ɨ̃s* (want pungent<IMPERF>) 'It is somewhat pungent'. The extended Example (40), presented in Section 5, is an excerpt from a free discussion on odour terms and illustrates how the above are used to describe gradience in odour quality.

Stative property verbs may be used attributively, but they are far less common than in predicate function. As nominal modifiers, the verb directly follows the head noun as in *ʔay sʔāt* (meat putrid) ‘putrid meat’. Odour verbs most frequently modify the noun *kʰlām* ‘odour’ as in examples (23)–(24).

- (23) *gajah kɛ lompot [kʰlām ʔisak jʔaŋ yɔh]; pantuay*
 elephant 3SG flee [odour acrid bone turtle] Malayan.pangolin
 ‘Elephants flee from the acrid smell of turtle shells; (and) Malayan pangolins.’
- (24) *gajah kɛ haŋɔp [kʰlām mahon ʔiwāʔ kanēt]*
 elephant 3SG scent [odour smell.noxious offspring small]
 ‘Elephants scent the noxious odour of small babies.’

Odour verbs can function as adverbial modifiers to convey manner or result, as illustrated in examples (25)–(26) where they directly follow the verb.

- (25) Eating starchy foods that smell spoilt (*prʔāt*) causes the potentially fatal condition *cikaʔ*:
hɛ cikaʔ, hɛ graŋ sʔāt
 1INCL have.illness_k.o 1INCL burp putrid
 ‘(When) we have *cikaʔ* illness, we burp putridly.’
- (26) *hɛ ɡɔrɛŋ ʔisak bawaŋ_putih*
 1INCL fry acrid garlic
 ‘We fried the garlic (until it) was acrid.’

As we have seen in Section 2.1, they occur frequently in the complement clauses of olfactory perception verbs, illustrated in (27)–(28).

- (27) *hɛ ʔaŋkit hanēh jaʔ ʔūŋ sʔāt*
 1INCL remove FUT:PROX then sniff putrid
 ‘We remove (it) later on and then (we) smell (it) putrid.’
- (28) *gayit kɛ sem plyāʔ, kɛ yɔk hɛ*
 tiger 3SG smell smell.bloody 3SG take 1INCL
 ‘(If) the tiger smells (us) as bloody, it takes us.’

3.1.2 Semelai odour quality terms

The Semelai odour quality terms presented in Table 3 are predominantly stative intransitive verbs. Earlier work had divided Semelai odour terms across the verb and expressive word classes (Kruspe 2004a, 2004b), however, this detailed study has resulted in a reappraisal. The majority of terms fulfil the morphosyntactic criteria of stative intransitive verbs: they feed various derivational processes associ-

ated with this word class, and can be negated, and modified for degree. The one exception is *kʰlām symɔy* ‘odour of underarm sweat’.

Several odour terms have complex syllabic structures that limit the applicability of most verbal derivational processes (Kruspe 2004a: 64), for example, the three trisyllabic terms – *dmarom*, *dmkār* and *rmɲas* – whose form excludes all derivational processes with the exception of nominalisation. The fact that they can be nominalised excludes them from the class of expressives. These three terms appear to be bimorphemic, with an <*m*> infix as the onset in the prefinal syllable, e.g., **d<m>kār*, however there is no synchronic evidence to support this. *Dmarom*, *dmkār*, and *rmɲas* are not only structurally marked, but all denote various pleasant, strong wafting odours from an unseen source that are associated with the presence of the supernatural and are ritually tabooed to mention when perceived in the forest.

The non-verbal odour term *kʰlām symɔy*, an associative noun phrase, resembles a source descriptor like *kʰlām bkaw* (odour flower) ‘odour of a flower’ or *kʰlām m<s>ʔes* (odour perspire<NMZ>) ‘odour of perspiration’. The meaning and form class of *symɔy* (<*y>mɔy*) are unknown, and from a synchronic perspective *kʰlām symɔy* is considered a non-source-based term.¹⁴ The citation form is always *kʰlām symɔy*, other odour terms are never cited in this way, but *symɔy* sometimes occurs independently in natural speech: *symɔy*, *ma=cəŋ goŋ hūm* (smell.sweaty IRR=immediately carry bathe) ‘(When my armpits) smell sweaty, I immediately go and bathe’.

Semelai odour verbs behave both morphologically and syntactically like the regular stative intransitive verbs that denote properties, like colour, value, or dimension (Kruspe 2004b: 287–301). Stative intransitive verbs are distinguished morphologically from non-stative ones by a formally different nominalization process (Kruspe 2004b: 293). This underscores the stative adjectival nature of these terms ‘be X-smelling’, as opposed to being intransitive process verbs ‘to emit X smell’.

Semelai odour descriptors take a range of verbal affixes available to stative property verbs, including the causative, as illustrated in the negative imperative example in (29), the collective circumfix indicating the simultaneous state of a group as in *b>rhom<an* (fragrant>COLL<) ‘all smelling fragrant’, and the habitual as in *pr-jʔɔp* (HAB-smell.stale) ‘always smell stale’ used to describe non-meat food-stuffs that are prone to rapidly perish.

- (29) *bɔy ma=p<r>lēŋ dak ʔen besen!*
 NEG:IMP IRR=smell.fishy<CAUS> water LOC basin
 ‘Don’t make the water in the basin smell fishy!’

14. There is no known Aslian cognate that would suggest **smɔy* is a source term.

Causative odour verbs feed further derivations like happenstance, as in *t-s<r>ʔit* (HAPP-putrid<CAUS>) ‘to inadvertently let (stg) smell putrid’, and the iterative as in (30).

- (30) *bɔy ma=c^h<r>ɲir-iʔ!*
 NEG:IMP IRR=smell.urine<CAUS>-ITER
 ‘Don’t keep making (it) smell of urine!’

Odour verbs are nominalized by a process of infixation of the reduplicated coda of the root into the prefinal syllable (Kruspe 2004a: 223), for example, *cɲɔl* ‘be pleasantly smoky-smelling’ and *c<l>ɲɔl* ‘ash layer (after firing a swidden)’ or ‘the pleasant smoky smell of this ash’.

- (31) The speaker rues not having access to a toilet and having to defecate in the open:
daʔ ye=lən jʔɔy s<t>ʔit
 NEG 1SGA=want make putrid<NMZ>
 ‘I don’t want to make a putrid smell.’

Nouns derived from odour verbs may function as the head of a noun phrase, as in *m<s>ʔɔs bras jaman* (smell.musty<NMZ> unhusked.rice of.old) ‘the mustiness of old husked rice’, and *dma<m>rom kmyan* (wafting.resinous.aroma<NMZ> *styrax.benzoin*) ‘the wafting resinous aroma of benzoin’. The derived nouns feed further derivations, e.g., in the prohibition, *daʔ sot b-ha<t>ɲet* (NEG allow HAVE-acrid<NMZ>) ‘Having acrid burning smells is not allowed’. Creating odours of combustion like *haɲet* and *c^hɲes* are tabooed in certain ritual contexts. A rare derivation, involving the prefixation of the middle voice and reduplication of the initial consonant, occurs in an intransitive imperative that is used specifically to inform people not to engage themselves in activities that would cause these odours:

- (32) *bɔy b-c^h-c^h<s>ɲes!*
 NEG:IMP MID-RDP-smell.smoky<NMZ>
 ‘Don’t go busying yourself with smoky odours!’

As in Semaq Beri, odour verbs are primarily used in predicate function, as shown in Example (33) and in the second sentence in Example (34). The subject is either expressed overtly as an NP, following or preceding the verb, but may equally have zero representation in the clause, see (35) below.

- (33) *k^hləm ke c^hɲəs*
 odour that aromatic
 ‘That odour is aromatic.’

- (34) *bserɛʔ kulɔt_tahon mə=k^h<m>ləm. deh, məmɔŋ rhom k^hləm deh*
indeed mushroom_k.o REL=odour<VRB> 3PL certainly fragrant odour 3PL
'Indeed thunder mushrooms are ones that smell. Those, their smell is certainly fragrant.'

Odour predicates are negatable with the verbal negator *daʔ* 'NEG' as illustrated in Example (35). This distinguishes them from members of the expressive word class, which cannot be negated (Kruspe 2004a: 399).

- (35) The speaker assesses an odour stimulus:
daʔ ye=k^hɛʔ k^h<m>ləm. ɕŋɔl, daʔ ɕŋɔl; sʔit, daʔ
NEG 1SGA=know odour<VRB> smell.smoky NEG smell.smoky putrid NEG
sʔit. k^h<m>ləm.
putrid odour<VRB>
'I don't know the odour it's emitting. Smoky? (It) is not smoky. Putrid? (It) is not putrid. (But it) is emitting an odour.'

Odour terms can be modified adverbially, for example, with the aspectuals *lɔc* 'PERF' as in (36) or imminent *ga=* 'IMM', or with degree adverbials like *ɲɔʔ* 'very' or *ʔen* 'just, only'. The latter distinguishes them from expressives.

- (36) *lɔc sʔit, s<t>ʔit baŋkay*
PERF putrid putrid<NMZ> carcass
'(It) already smells putrid, (like) the putrid smell of a carcass.'

The verb *lən* 'to want, desire' co-occurs with property verbs of colour dimension, and odour among others, to express an incomplete or unachieved state of a particular quality. For example, low saturation of a colour, *lən kuniŋ* (want yellow) 'yellowish', or odour, as in *lən sʔit* (want putrid) 'somewhat putrid-smelling'.

Odour verbs may occur as attributive modifiers, directly following the noun (Kruspe 2004b: 288), e.g., *k^hləm ɕŋɔl* (odour smell.smoky) 'a smoky odour', or in Example (37), which also illustrates a relativized odour term.

- (37) *daʔ ye=ca ye jalu haŋet. mə=rmɔl mə=haŋet, r<l>mɔl.*
NEG 1SGA=eat 1SG boar acrid REL=male REL=acrid male<NMZ>
'I don't eat acrid-smelling wild boar. The ones that are male are the ones that are acrid, the males.'

4. The semantics of odour quality terms

Odour quality terms in Semaq Beri and Semelai refer uniquely to odour and do not reference in any way the source of the odour, such as with English 'fruity' for

fruit-like odours or ‘putrid’ from ‘to putrefy’. None of the terms are related etymologically to nouns naming the source of the odours or the verbs describing the processes or states that produce them.¹⁵ Compare the Semaq Beri and Semelai noun *mham* ‘blood’ and the respective odour terms *plēŋ* and *plyāʔ* ‘be bloody-smelling’, or the Semaq Beri verb *but* ‘to be decayed, spoilt’ and the odour of decay *pgus* ‘be musty, mouldy-smelling’.

Tables 4 and 5 present the odour terms in Semaq Beri and Semelai along with their exemplars in an attempt to convey the quality of each odour, and to underscore the terms are abstract and thus apply to a range of odour sources in the natural world. In order to understand the meaning of each term, exemplars were collected using a variety of methods, including opportunistically noting down odours and their sources when they occurred in free speech, extracting mentions from recorded stories, eliciting folk definitions for the lexicons, and asking speakers to list all of the sources that they could think of for each odour term, as part of the focused investigation into olfactory language. Appendices A and B provide a full list of collated exemplars, although even these detailed lists should not be considered exhaustive.

Table 4. Exemplars of odour terms in Semaq Beri

Odour	
term	Exemplars
<i>rʔom</i>	fragrant floral and balsamic odours of plants, fruits and resins; numerous kinds of cooked game. Covers a much broader range of odours than the Semelai cognate
<i>waŋi</i>	commercial fragrances and perfumes
<i>chjūs</i>	covers a range of ripe fruits, particularly small fruits that are eaten raw
<i>chjōs</i>	roasted or smoked meat.
<i>cʔak</i>	primarily for roasted meat, but some speakers include scorched or burnt food
<i>ʔisak</i>	the odour of burning, particularly from the application of fire to singe off fur or remove turtle shells when preparing game for consumption
<i>chjās</i>	a very broad range of pungent odours, as well as unpleasant animal scents ranging from mousedeer to ants and termites; some kinds of plants and resins used as incense, and kerosene
<i>chjīs</i>	earthy odours including that of soil and clay, smoke from some hard resins, and the coats of several animals
<i>plyāʔ</i>	the odour of blood and raw fish or meat, particularly macaques and domestic pork; some unpleasant plants and the odour of rain evaporating off hot rocks

15. Based on current detailed knowledge of Southern Aslian from Kruspe’s unpublished lexical corpora of approximately 4,000 entries each for Semaq Beri and Mah Meri, and 7,600 entries for Semelai.

Table 4. (continued)

Odour	
term	Exemplars
<i>haṇēr</i>	the odour of blood or raw meat
<i>sʔūr</i>	the sour odour of stale, almost-off foods that have been cooked in liquid, from boiled rice and tubers to stewed game. The odour indicates that the food is safe to reheat and eat.
<i>prʔāt</i>	odour of rotten vegetal foods like cooked rice or tubers, or over-ripe or rotting fruit; stale water
<i>pgus</i>	the odour of mould and mustiness, typically mushrooms, or things that have been kept for too long like uncooked rice or tubers
<i>mahoŋ</i>	noxiously foul odours of poisonous fruits and tubers; strong smelling game like Malayan tapir; human afterbirth
<i>sʔāt</i>	putrefaction; rotten meat, either raw or smoked, but kept too long; dead bodies, and faeces. The odour of lesser rodents, like rats and shrews.
<i>sʔīt</i>	the malodorous smell of skin afflicted with mange; someone who hasn't bathed in a long time; the coats of large felids because they smell of rotting carcasses; some kinds of civet; corpses; the sun
<i>hapak</i>	sweat, strong body odour; a fresh carcass
<i>praʔāt</i>	urine and stale urine; unwashed clothes
<i>santen</i>	odour of a person on the verge of death or a recently deceased corpse.

Table 5. Exemplars of odour terms in Semelai

Odour	
term	Exemplars
<i>rhom</i>	fragrant, balsamic odours of flowers, ripe fruits, and resins. The primary exemplar is swidden rice, either raw or cooked.
<i>cʰɣas</i>	balsamic odours of flowers and resins; perfume, soap and talcum powder
<i>rmɣas</i>	the wafting odour of large strong-smelling ripe fruits like durian and jack fruits; heavily fragrant odours of some flowers and resinous incenses
<i>dmarom</i>	wafting odour of fragrant flowers and resinous incense; odour of new cloth
<i>dmkār</i>	wafting resinous odours
<i>waŋi</i>	fragrant odours of commercial goods like perfumes.
<i>cʰɣɔs</i>	a delicious aromatic odour described by speakers as giving one the feeling of being satiated without eating. The odour of roasted meats and vegetables, coffee, and some plants. The popcorn-like odour of binturong (<i>Arctictis binturong</i>).
<i>cɣɔl</i>	the pleasant odours of burning vegetation associated with firing a swidden and the resulting layer of ash. The odour of roasting small game.

Table 5. (continued)

Odour	
term	Exemplars
<i>ch̥ɛs</i>	the odour of roasted or burnt flesh of smaller-bodied land game or turtles and fish; the faint smell of smoke from a distant swidden; burning plastic. <i>Ch̥ɛs</i> is a ritually dangerous odour that must be suppressed during certain healing procedures. It is fainter than <i>haɲet</i> .
<i>haɲet</i>	Acrid smoky odours produced by combustion, like burning rubbish, exhaust fumes, lightning strikes, and electrical shorts. Typically, the odour associated with the singeing off of hair of larger bodied land game like wild boar and deer (game is never skun), and the odour of burning flesh and bones. The unpleasant gamey odour of some male wild boar meat. <i>Haɲet</i> is a ritually dangerous odour that must be suppressed during certain healing procedures.
<i>mʔʔs</i>	the odour of mould or mustiness; the odour caused by humidity that develops in items stored for a long time.
<i>jʔɔp</i>	sour odour of stale or off food that is no longer edible; sweaty body odour.
<i>sʔit</i>	the odour of putrefaction: particularly of corpses or carcasses, faeces; the scent of animals like weasels and snakes; the odour of edible fermented fish; the stinkhorn mushroom (<i>Phallus indusiata</i>)
<i>crus</i>	disgustingly fetid headache-inducing odours, typical exemplars are the odour of skin infections, mangey dogs, and inedible vegetal substances
<i>mawōŋ</i>	noxious odours indicating inedibility
<i>raŋhēŋ</i>	over-powering wafting odours like spilt petrol, a rotting carcass
<i>ch̥ɲis</i>	pungent, musky odours of rodents, a kind of oleo-resin, the odour of earth, and generally things that one wouldn't desire to eat.
<i>ptūt</i>	earthy odours associated with the decay and humidity of the forest floor; typical exemplars include large terrestrial forest animals and their faeces and an orchid (<i>Apostia nuda</i>) the sap of which is used to mimic the odour of the forest, masking one's human odour when in the forest. It also includes some fish or the entrails of fish that feed in the muddy beds of watercourses.
<i>hayīr</i>	a large quantity of fresh human blood, for example from childbirth, or a severe wound; flesh; offal; raw fish
<i>hamis</i>	the odour of a large quantity of blood, associated with butchering large land game; excessive menstrual blood
<i>plēŋ</i>	the odour of freshly caught fish; blood of smaller land game, like langurs. Also associated with large aquatic animals that live in the decay-rich watercourses.
<i>kʰləm</i>	underarm sweat, the scent of baby long-tailed macaques (<i>Macaca fascicularis</i>), and
<i>symɔy</i>	similar sweaty odours
<i>ch̥ɲīr</i>	urine and similar ammonia-like odours
<i>hancēŋ</i>	concentrated stale urine

The exemplars listed are not fixed to culturally known entities: odour terms in Semaq Beri and Semelai incorporate new members, demonstrated in both languages by the inclusion of recently introduced items – e.g., onions and garlic, cow's milk, petrol, rubber (*Hevea brasiliensis*), goats, curry powder, and electricity – revealing that usage is not culturally prescribed, but depends on some inherent property of the odour. A parallel is found in Semaq Beri food categorization, where introduced foods are admitted on their perceived physical similarity to existing class members (Burenhult & Kruspe 2016: 182).

To foreshadow the main patterns observed in both the Semaq Beri and Semelai odour lexica, there are terms for the smell of decomposition – distinguishing odours of faeces and rotting flesh from the humus-like odours of vegetal decay and musty, mouldy odours – bodily odours of blood, sweat, and urine; and fragrant and balsamic odours like ripe fruits, flowers, and some resins. There are also separate terms distinguishing different kinds of blood and raw flesh odours; different kinds of odours of combustion – the unpleasant burning of bones, hair and flesh; delicious roasting odours; odours of burning vegetation – and odours indexing the various stages of decomposition of food.

Odour categorization bears some resemblance to that of colours in both Semaq Beri and Semelai. Odours are described in terms of potency or prototypical states using specific kinds of adverbial modification (Section 3.1.1 and Section 3.1.2). It became apparent in discussions that the odour of something may be perceived as resembling or combining different odour qualities simultaneously. Just as colours may combine different hues and be described as “reddish-brown” or “blue-black”, speakers will identify fine-grained distinctions using odour terms; for example, *plyā?*, *cḥhās kʰlām kɛ* (smell.bloody pungent odour 3sg) ‘Its smell is bloody (and) pungent’ (Semaq Beri), or *crus rɔm sʔit* (fetid with putrid) ‘It’s (both) disgustingly fetid and putrid’ (Semelai) from a speaker describing the highly offensive odour of unprocessed latex from rubber trees.

Odour terms in Tables 4 and 5 have a broad range of referents (see Appendices A and B for detailed lists), but some are more restricted; for example, the essentially human body odours of *santen* ‘to have a smell of death’ (Semaq Beri) and *kʰlām symɔy* ‘odour of underarm sweat’ (Semelai). This is not a characteristic peculiar to odour verbs. It is also noted in other sensory domains in these languages, for example, contextualized visual descriptors like the colour term *jhor* ‘to be russet’ (Semelai), which only refers to the colour of hair or stringy hair-like fibres.

Terms for unpleasant odours outnumber those for pleasant ones in both languages, following a general pattern of asymmetry observed for diverse languages (see Lee 2015 for Amis; O’Meara & Majid 2016 for Seri; Hombert et al. 2016 for Li-Wanzi; Wnuk & Majid 2014 for Maniq; see also Boisson 1997 and Majid 2021b);

however, both languages do make distinctions between various kinds of inherently pleasant odours, as shown above in Tables 3 and illustrated in Example (38) from Semelai.

- (38) Pleasant odours render some medicinal incantations ineffective:

daʔ sot b-kʰləm ʔlɛm haʔ dɔl, rhom, cʰɣɔs. daʔ ki=sukvʔ
 NEG allow HAVE-odour pleasant AT house fragrant aromatic NEG 3SGA=like
la=jampiʔ

A=incantation

‘Having pleasant odours in the house, fragrant (or) aromatic, isn’t allowed.
 The incantation doesn’t like it.’

Speakers readily make hedonic judgements of odours as either “pleasant” or “unpleasant”. Semaq Beri speakers use the general evaluative terms *bayek* ‘to be good’ or *jaʔbɛc* ‘to be bad’. Semelai has a specific positive evaluative term for sensory percepts, *ʔlɛm* ‘to be pleasant’,¹⁶ and the negated *daʔ ʔlɛm* (NEG pleasant) ‘to be unpleasant’. Example (39) provides a response to a stimulus, where the Semelai speaker gave a hedonic response before naming the odour quality.

- (39) *ʔlɛm ke, cʰɣɔs ʔen muh*

pleasant that aromatic LOC nose

‘That was pleasant, (it) is aromatic in (my) nose.’

Judgements about the aesthetic characteristics of an odour are personal, and therefore somewhat variable among speakers (see also Arshamian et al. 2022). Two Semelai sisters talking about the role of *cpɔt*, a kind of ginger (*Elettariopsis* sp.) used as an odorant in healing rituals, demonstrate how the apprehension of odour is filtered through personal preference. One sister described the odour as *cʰɣɔs* ‘aromatic’, while the other described it as unpleasant, *cʰɣis* ‘pungent’.

The rich linguistic resources for talking about odour in Semaq Beri and Semelai match cultural preoccupations with odour in both communities, as noted previously for related languages Jahai (Burenhult & Majid 2011) and Maniq (Wnuk & Majid 2014), and in the broader anthropological literature of Aslian-speaking groups (Dentan 1965 for Semai, Endicott 1979 for Batek, Howell 1989 for Ceq Wong, and Gianno 1990 for Semelai). The humid, biologically rich tropical rainforests of the Malay Peninsula abound with odour emitting sources, and olfaction provides a useful sensory channel for distilling information in practical matters of subsistence – scenting an animal den or the ripeness of a tree in fruit. But in the

16. The verb *ʔlɛm* ‘to be pleasant’ is used to evaluate percepts in all sensory modalities other than visual, e.g., *ʔlɛm sdɔc* ‘It is nice (and) cool (here)’, or *daʔ ʔlɛm ma=trsvʔ* (NEG pleasant IRR=listen) ‘It’s unpleasant to listen to’.

context of their traditional animistic religion, odour plays a crucial role in their relationships with the supernatural with whom they share the physical environment. It is here in religion that it is perhaps most prominent, shaping typically mundane daily practices of life for both the Semaq Beri and Semelai. In fact, some speakers who were at a loss to list an exemplar of an odour in the exemplar-listing task would instead readily provide the cultural context. For example, among the Semelai, they would name the cultural praxis rendering a specific odour term ineffable.

Hedonic classification is largely incongruent with how odours are organised in relation to ritual praxis, that is, there is no dichotomous distinction into “good smells are good” and “bad smells are bad”. Rather, their value is contextually determined (Gell 1977: 27). This is illustrated in Example (38) above, where normally pleasant odours are ‘dangerous’, their presence antipathetic in a particular healing context. In a different healing ritual, it is unpleasant odours caused by combustion that present the same danger to the process. Furthermore, there is no polemic construction in either society that distinguishes ‘otherness’ in terms of odour quality, for example typing race, gender, age status, spirits, and so on, contra to what has been reported in settings elsewhere (see, e.g., Classen 1992; van Beek 1992; Allen & Burridge 2006). Instead, it is the act of sensory perception and different realisations of perception from the perspectives of the various kinds of non-human others that comes into play in the two cultures. Essentially there is some ambivalence toward odours in terms of whether they are symbolically ‘good’ or ‘bad’; unlike hedonic judgements, ‘danger’ relating to odour quality was generally not proffered in speaker responses to odour stimuli, or in other elicitation tasks.

Finally, there is no metaphorical extension of odour quality terms, nor are they used metonymically in nominal compounds to name objects in the natural world as reported for example, in Seri (O’Meara & Majid 2020). With the exception of the Semaq Beri term *sakeʔ rʔom* (pandanus fragrant) for the Malay condiment *daun pandan* ‘Screw pine (*Pandanus amaryllifolius*)’, odour terms only occur in nominal compounds that are direct loans from Malay, for example *sray waji* ‘Citronella (*Cymbopogon nardus*)’ (Semelai), and *miṇāk waji/miṇak waji* ‘commercial perfume’ (Semaq Beri/Semelai). Semelai has an extensive avoidance lexicon that is employed in certain contexts (Kruspe 2004a). The nominal *kʰlām* ‘odour’ is used in the formation of several terms, but odour quality terms are never used in this way. Furthermore, although some verbs expressing physical property have replacement avoidance terms, odour terms are not among them.

5. Usage

Odour quality terms occur frequently in natural speech in a variety of daily contexts. There are no terms that belong to a specialist jargon, have social restrictions, or are considered ‘impolite’ or otherwise inappropriate in certain social company, contrary to what has been reported in settings elsewhere (e.g., Hombert et al. 2016; Lee 2015; Storch 2014; van Beek 1992).

In this section we provide some examples from the Semaq Beri and Semelai corpora. The corpora consist of a wide range of genres – traditional narratives, personal stories, and procedural and explanatory texts – collected over the last two and three decades, respectively. The following examples are drawn from natural discourse and are intended to illustrate how speakers of Semaq Beri and Semelai employ olfactory perception in their interactions in the environment and to exemplify the everyday nature of smell talk.

In the first text, a Semaq Beri speaker describes the odour of various stages of decomposition of an animal, from when it first dies, until the flesh rots away and only skin and bones are left. He combines different odour quality terms and employs the various means of adverbial modification discussed in Section 3.1.1 to express fine nuances in odour quality. Note that throughout the text, the perception of odours is presented from the perspective of hypothetical perceivers.

- (40) *he hamwʔ kan kurvɛ kʰlɛm kɛ təʔ jaʔ, p<rs>gus hən he*
 1INCL smell AFF less odour 3SG that then musty<DIM> QUOT 1INCL
 ‘(If) we smell the odour less (strongly) you know, then we say “It’s mustyish”’
kɛ jʔɔy ʔakan p<rs>gus kanɛt
 3SG make intend musty<DIM> little
 ‘It smells a little mustyish.’
ʔanūʔ b-kʰlɛm kɛ kwɔt təʔ jaʔ, pɟus hən gi
 HES HAVE-odour 3SG strong that then musty QUOT 3PL
 ‘Umm, (if) it has a strong smell, then they say “It smells musty”’
ʔʔə kurvɛ kwɔt di=təʔ, lɔc kɛ gaʔ roh lɔc, but kɛ lɔc mɔk
 AFF less strong FOC=that PERF 3SG IMM finished PERF spoilt 3SG PERF like
baʔ baŋkay ʔaleʔ təʔ
 LOC carcass long.time that
 ‘Hmm, like that is less strong, it’s going to finish (stinking). It has rotted away, like an old carcass.’
kɛ jʔɔy daʔ kʰlɛm p<s>gus kʰlɛm kɛ
 3SG make exist odour musty<IMPERF> odour 3SG
 ‘Its smell, it gives off a smell that’s mustyish.’

beh ke s<t>āt btol

NEG 3SG putrid<IMPERF> true

‘It doesn’t smell really putrid.’

ʔanū baʔ spay təʔ jaʔ sʔāt btol he hamṽʔ

HES LOC new that then putrid true 1INCL smell

‘Umm, (but) (when) it’s fresh, then we smell it really putrid.’

ke ʔaleʔ lvc təʔ daʔ kʰləm bukan təʔ

3SG long.time PERF that exist odour not that

When it is old, it isn’t that it doesn’t have a smell.

ke jʔy kʰləm p<s>gus təʔ jaʔ p<s>gus hən gi

3SG make odour musty<IMPERF> that then musty<IMPERF> QUOT 3PL

‘It smells musty, then “(It’s) musty” they say.’

jaʔ sʔāt, jaʔ sʔāt btol lah kʰləm təʔ

then putrid then putrid true EM odour that

‘Then when it smells putrid, then that smell is really putrid.’

...təʔ mulaʔ ke ʔanūʔ kbəs təʔ,

that first 3SG umm dead that

‘...at first, (when) it umm, dies.

mulaʔ ke but bukan təʔ, he hamṽʔ sʔāt təʔ ʔah jlək ke dɔl, ʔsəc

first 3SG rotten not that 1INCL smell putrid that ah vapour 3SG still flesh

ke dɔl

3SG still

‘At first, (when) it hasn’t rotted away (yet), it smells putrid..., (when) its vapour (is) still (there), it’s flesh (is) still (there).’

ʔanūʔ wel kan kurṽj təʔ jaʔ, ke jʔy c<s>ʔīs təʔ wel

HES too AFF less that then 3SG make smell.earthy<IMPERF> that too

‘Umm so then you know it (=smell) lessens, and so it smells earthy.’

ʔanūʔ baʔ ke lvc gaʔ roh lvc təʔ lvc kurṽj kʰləm ke jaʔ, hamṽʔ

HES LOC 3SG PERF IMM finished PERF that PERF less odour 3SG then sense

təʔ p<s>gus hən gi

that musty QUOT 3PL

‘Umm then when it (=the rotting flesh) has just about gone, (and) its smell has decreased, then, “It smells musty” they say.’

In Example (41), a Semaq Beri speaker describes the difference between the odour of smoke, the odour of something burning, and the burnt item’s odour.

- (41) *he gaŋ nasiʔ, gor ke təʔ. he haŋop ʔisak təʔ jaʔ. he*
 1INCL boil cooked.rice scorch 3SG that 1INCL scent acrid that then 1INCL
bukaʔ hanēh jaʔ, bukaʔ nɔʔ nasiʔ təʔ, hnēʔ cʰŋās di=təʔ.
 open FUT:PROX then open this cooked.rice that that:NVIS pungent like=that
kʰləm ke cʰŋās
 odour 3SG pungent
 ‘We cook rice (and) it scorches. Then we scent it wafting, acrid. Then later we
 open (the pot), we open it (and) that rice, that is pungent like that. Its odour is
 pungent.’

Smell talk is also found in day-to-day activities of the Semelai. The Semelai lived in swiddens where rice, cassava, and vegetables were grown, but game was always hunted and fished. In the extract from a conversation in (42), the late speaker was discussing how he used to hunt. He talks first about the urine-like odour of flying foxes, and then the role of the odour of urine in scenting troops of monkeys.

- (42) Speaker A: *nɔʔ=hn ye=ʔen haʔ nɔʔ, klwaŋ ʔam beh dɔs=cəʔ*
 this=POSS 1EXCL=PL AT this flying.fox feel no reach=EM
 ‘Now (for) us here, flying foxes I feel, no, (they) don’t come (any-
 more).’
masə rəm b-bdil mə=ma=kʰɔm ʔrəy
 time with HAVE-gun REL=IRR=get many
 ‘In the time (when) we had guns, we could get many.’
br-wen səc haʔ, daʔ kʰləm dom na-haʔ hā, kʰləm ʔr
 MID-discard flesh AT EXIST odour AFF NMZ-AT FOC odour urine
deh, ʔr klwaŋ hā, cʰŋir
 3PL urine flying.fox FOC smell.urine
 ‘This flesh was discarded. It has an odour yes, this here (indicat-
 ing back of his neck), the smell of their urine, flying fox urine
 here, it smells of urine.’
 Speaker B: *ʔasɔl cin, ʔlem ma=ca*
 when cooked pleasant IRR=eat
 ‘When cooked, they taste good.’
 Speaker A: *kʰɛʔ!*
 know
 ‘That’s your opinion, I wouldn’t know!’
 Speaker C: *beh, klwaŋ daʔ daʔ mandeh*
 no flying.fox NEG EXIST what
 ‘No, flying fox, there’s nothing wrong with (them).’
 Speaker A: *ʔac! sbroh mə=ʔrʔr cʰŋir*
 ugh all REL=urinate smell.urine
 ‘Ugh! Everything that urinates smells of urine.’

jər cloy ?ən cʰɨr ɲam=cə?
 urine monkeys 1SG smell.urine smell=EM
 ‘The urine of monkeys and white-handed gibbons, I smell (it) as urine-smelling.’
ye=?en mə=p-bri ma=ɲam kan jər deh.
 1EXCL=PL REL=HAB-forest IRR=scent AFF urine 3PL
 ‘We who are always in the forest can scent their urine, you know.’
?asal dehn jtek ptom, som dri? brintay. ma=ɲam kʰləm
 when 3PL sleep night morning 1COLL stalk IRR=scent odour
da? ke, dmpak.
 EXIST that follow
 ‘So they’d sleep at night, (and) in the morning we’d stalk them.
 One would scent the odour was there (and) follow after (it).’
he=dmpək. ha? ke=cə? k<n>de? cloy
 1INCL=follow.after AT that=EM dwell<NMZ> monkeys
cʰɨr. ha? ke cʰɨr
 smell.urine AT that smell.urine
 ‘We’d follow after (it). There, the monkeys’ place of rest would
 smell of urine. There it would smell of urine.’

In another conversation, two speakers discuss using the wind to assist them in scenting something in the forest in order to locate it.

- (43) Speaker A: *ma=ɲam kʰləm ki=gəŋ la=ribut s<t>?it buntəŋ kah*
 REL=smell odour 3SGA=carry A=wind putrid<NMZ> rotten Q
mandeh macam macam=cə?
 what like like=EM
 ‘One can smell the odours that the wind carries. The putrid
 stench of rotting (animal) or whatever thing.’
 Speaker B: *?asal ki=gəŋ la=kəh smbroh ma=ɲam*
 when 3SGA=carry A=3SG everything IRR=smell
 ‘When it carries (it) one can smell everything.’
 Speaker A: *kan jrəs br-kʰəm dom buntəŋ p?la? kʰbəs maləŋ ki=jon*
 AFF quick MID-get AFF rotting animal dead side 3SGA=give
ribut ?en dri? ma=reŋ jake ha? ke, ma=croh tet ke
 wind LOC self IRR=seek then AT that IRR=find TO:spec that
 ‘It is isn’t it, quickly we get (it) yes, it’s a dead animal decompos-
 ing. (From) the side the wind gives (it) to us, in that case one
 would seek (it) there, one would find it over there.’

- Speaker B: *ma=jŋɔʔ tɔm ribut ke tɔm haʔ hɔn*
 IRR=look source wind that SRC AT where
 ‘One looks at where the source of the wind is from.’
- Speaker A: *ʔə tɔm haʔ hɔn*
 AFF SRC AT where
 ‘Mm, from where?’
- Speaker B: *hɛ=rɛŋ*
 1INCLA=seek
 ‘We seek (it).’
- Speaker A: *ma=jŋɔʔ ʔen dawon dloŋ deŋ ke. hɔn tɔm cɔʔ, hɔn tɔm*
 IRR=look LOC leaf tree like that where SRC AT:down where SRC
coŋ cɔʔ ke pʔlaʔ kʰbəs mʔnaʔ
 down.yonder AT:down that animal dead meaning
 ‘One looks at the tree leaves like this. (If the wind is coming)
 from somewhere down there, somewhere from down yonder, the
 meaning (is) the dead animal’s down there.’

6. Discussion

Previous work noted the Semelai, unlike the Semaq Beri, had low codability for smell: in a psycholinguistic naming task, the Semelai showed lower agreement in how they named smells than the Semaq Beri (Majid & Kruspe 2018). This paper has presented an in-depth linguistic analysis to illustrate that both Semelai and Semaq Beri have rich linguistic resources for talking about sensory perception – from dedicated perception verbs and sensory quality verbs, to specialized demonstratives – and olfaction is no exception. The presence of robust inventories of dedicated odour quality terms is consistent with the semantic profiles of both Semelai and Semaq Beri, and conforms to the general semantic typology of Aslian languages where fine-grained semantic distinctions are made in monolexemic forms (see, e.g., Matisoff 2003; Burenhult & Kruspe 2016; Wnuk 2016).

Odour qualities in both Semaq Beri and Semelai are expressed by basic smell terms that are used exclusively to describe odour. Despite the fact that Semelai was previously found to have low codability for smell, we show there are, in fact, more tokens of basic smell terms in this language than in Semaq Beri. Based on careful analysis, we established that in neither language are basic smell terms drawn from other parts of the sensory lexicon, nor do any reference the source of an odour. Overall, both languages show rich lexical expressivity for the domain of olfaction – beyond mere reference to an object or substance with a characteris-

tic smell, as typical of European languages (cf. Majid 2021a) – and comparable to what has been described for other languages, as we further illustrate below.

Basic smell verbs have previously been attested in Jahai (Burenhult & Majid 2011); in Maniq odour terms are distributed across the verb and noun classes; while in Semai (Central Aslian), they belong to the expressive word class (Tufvesson 2011). From a broader typological perspective, it is common to find odour qualities encoded in intransitive verbs elsewhere (e.g., Amis (Austronesian), Lee 2015; Kammu (Austroasiatic), Svantesson et al. 2014; Seri (Isolate), O'Meara & Majid 2016), but there are also numerous descriptions of smell vocabulary suggesting they are especially likely to be formally idiosyncratic and fall outside of regular word classes, as particularly noted among African languages (Blench & Longtau 1995; Storch & Vossen 2007; Hombert et al. 2016). In Semaq Beri and Semelai, basic smell terms constitute cohesive categories both morphosyntactically and semantically. They belong primarily to a single established form class, namely verbs, and within this, to the subclass of intransitive verbs that describe properties, such as dimension, colour, texture, and human propensity. The smell terms display the typical morphosyntactic features of the verb classes of the respective languages: they are used predicatively, take verbal negation and aspectual modification, and may directly modify a noun. In keeping with stative property verbs, adverbial modification is used to express gradience. Semelai smell verbs take a full range of verbal derivations; Semaq Beri smell verbs show some idiosyncrasies, for example, like colour verbs, they have not been attested with the infixing causative derivation, but otherwise behave no differently from other verbs in the class.

Both Semaq Beri and Semelai have formally similar terms in their respective smell lexicons that differ in one segment in the final syllable (see Table 3). Vowel apophony has been associated with the expressive word class, and in particular with iconicity and the expression of gradience in the sensory lexicon (Diffloth 1976; Tufvesson 2011; Wnuk 2016). These similarities could be the result of archaic derivational morphology, iconically motivated lexical innovation, or of intra-Aslian borrowing. Semelai speakers do not distinguish paradigmatic contrasts among terms based on the variation in vowel quality, something they are able to do for gradience distinctions in auditory descriptors and verbs of dimension. It remains unclear how an alternation in vowel quality would function to signal a different odour quality (see O'Meara et al. 2018), or indicate a different sense modality, as with the seemingly related pair *ɲɔl* 'be pleasantly smoky-smelling' and the visual descriptor *ɲel* 'the appearance of fire glowing in the distance' (Semelai), although perhaps synaesthetic association could provide an explanation for the latter type of alternation. Currently, these smell terms can only be

treated as monolexemic, synchronically unrelated forms pending further investigation.

The majority of the smell terms discussed in Section 3 can be applied to a diverse range of referents, as illustrated in Tables 4 and 5 (see also Appendices A and B). The kinds of odours that are lexicalized in Semaq Beri and Semelai include: the smell of faeces and decomposing bodies; blood, sweat and urine; fragrant fruity and floral odours; musty, mouldy odours; odours from various kinds of combustion, and odours indicating stages of the decomposition of food. Cultural differences also emerge, with the horticulturalist Semelai having a distinct category for the odour of burning forest for a new swidden, and the assignment of faecal odours to different categories based on a conceptual distinction between the forest and settled human spheres – a distinction that is not so sharply defined for the hunter-gatherer Semaq Beri.

The odour lexicons of both languages also contain borrowings from Malay; for example, Semaq Beri *mahon* ‘noxiously foul smelling’ and Malay *maung* ‘disgusting in taste or smell’. Less clear is an example like *ch̥ɲis* ‘earthy-smelling’ (Semaq Beri), ‘pungent’ (Semelai). Although it formally resembles Malay *cengis* ‘bad odour or taste’, it is one of numerous indigenous terms in Semaq Beri and Semelai that share the form *ch̥ɲVs* (cf. Table 3). While the Malay terms often conflate TASTE and SMELL, in Semaq Beri and Semelai the loanwords are uniquely smell terms. Some of the same Malay loanwords are also found in the Jahai and Maniq odour lexicons, like Semelai *hancēɲ* ‘to have a stale urine odour’ and Jahai ‘*haɲc̥ɲ*’ ‘to have a urine-like smell’ from Malay *hancing* ‘to smell vilely, e.g., a urinal’ (Wilkinson 1932). At present, there are no comprehensive accounts available of olfactory language in Malay.

None of the Aslian languages has a written tradition, but the presence of cognate odour terms and common semantic distinctions throughout the various sub-branches of the family suggests long-term stability, and excludes recent origins as source terms or from other sensory domains, see Jahai (Burenhult & Majid 2011), Maniq (Wnuk & Majid 2014), Mah Meri (Kruspe 2010), and Semai (Dentan 1965). Compare Semelai *plēɲ* with Jahai *pl̥ɲɛɲ* for all kinds of raw meat and fish or blood odours, Semaq Beri *praʔāt* and Ceq Wong *praʔūt* for the smell of urine, or Semaq Beri *c̥ak* and Jah-Hut *c̥ɛk* for the odour of roasting meat (Kruspe field-notes). On the basis of several cognate terms with similar meanings in Austroasiatic languages outside the peninsula, Burenhult & Majid (2011) postulate that Proto-Aslian most likely already had these terms. Longevity of smell terms has also been suggested in the Totonac-Tepehua language family. O’Meara et al. (2018) found at least eight languages had been reported to have basic smell terms, often appearing in an ideophone class. The lexicons are large in comparative perspective, with the median number of smell terms being 21 (ranging between 3 and 45 terms across

languages). Unlike what has been described for the Aslian languages, in these languages it is common to find conflation between taste and smell terms (e.g., *tkak* ‘spicy odour and taste’, *sʔoʔo* ‘salty taste and odour’, *saʔsi* ‘sweet odour and taste’ in Huehuetla Tepehua). One striking finding from this study of Totonac-Tepehuan languages was the fact that terms for taste showed more stability across languages than terms that were exclusively used for smell, leading the authors to conclude that smell terms may be more malleable to local smellscape. An in-depth study across the Aslian language family could determine if this was the case for these languages too. The current study provides valuable primary data to enable such comparative work in the future.

7. Conclusion

Semaq Beri and Semelai both have elaborate smell lexicons, contrary to the claim that: “There is no semantic field of smells” (Sperber 1975: 115). This study thereby adds to the growing body of literature that illustrates the expressive possibility of smell in language (e.g., Majid 2021a; Jędrzejowski & Staniewski 2021). Critically, despite the low efficient codability of smell in Semelai previously reported in a psycholinguistic experiment (Majid & Kruspe 2018), Semelai is shown to have comparable lexical codability for smell to Semaq Beri. This shows the importance of clearly differentiating different aspects of linguistic expressibility in future work (cf. Levinson & Majid 2014). Notions of smell can be encoded throughout the linguistic system, including its grammar (e.g., Floyd et al. 2018). Critically, this study finds that Semaq Beri and Semelai show a high degree of similarity in their categorization of odour, capturing distinctions that perhaps typify human experience in pre-industrialized smellscape. These notions appear to be wide-spread within the language family and perhaps even across this whole area. It remains an open question for future research to disentangle these possibilities.

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Abbreviations






1	first person	IRR	irrealis
2	second person	ITER	iterative
3	third person	LOC	locative
A	agent	M	masculine
AFF	affirmative	MID	middle voice
AT	locative	MOT	motion
AUG	augmentative	NEG	negative
CAUS	causative	NMZ	nominalization
COLL	collective	NVIS	nonvisual
DIM	diminutive	PERF	perfect
EM	emphatic	PL	plural
EXCL	exclusive	POSS	possessive
EXIST	existential	PROX	proximal
F	feminine	PST	past
FOC	focus	Q	question
FUT	future	QUOT	quotative
HAB	habitual	REL	relative marker
HAPP	happenstance	RDP	reduplication
HAVE	possessive	SG	singular
HES	hesitation	SRC	source
HORT	hortative	TO:spec	direction, specified
IMM	imminent	VRB	verbalizer
IMP	imperative	k.o	kind of
IMPERF	imperfective	s.o.	someone
INCL	inclusive	stg.	something

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Appendices

Here we provide the complete exemplar listing for odour terms in Semaq Beri (Appendix A) and Semelai (Appendix B). The more typical exemplars are listed first for each entry. Scientific nomenclature has been included where possible. Some exemplars are translated with ‘kind of’ (abbreviation k.o.) when speakers listed a specific type of mushroom, tuber, etc., and more precise identification was not possible.

Appendix A. Semaq Beri odour terms with their corresponding exemplars

Exemplars	
sʔāt	faeces; dead animal; old smoked meat or fish, decomposing meat; rotten meat, that we have kept too long; meat/fish that hasn't been smoked properly; stew we leave too long; smell of our armpits if we haven't bathed; a fart; flower and fruit of the Kulim tree (<i>Scorodacarpus borneensis</i>); k.o. tubers (<i>bət tāw</i> and <i>bət palhəl</i>); rats, mice and shrews (<i>karew</i>); moonrat (<i>caken</i> , <i>Echinosorex gymnura</i>); k.o. civet (<i>prper</i>); a belch when suffering from a k.o. gastric illness; a k.o. resin (<i>damar kmayow</i>); rotting foliage; k.o. tree (<i>dlɔŋ kuŋkuŋ</i>) (in Malay <i>pəkək tahi</i> 'faeces tree'); car tyres; coagulated latex (<i>Hevea brasiliensis</i>); Malayan tapir (<i>Tapirus indicus</i>)
sʔit	a fart; a mange-afflicted dog scratching itself; the smell of civet fur smelt up close; unwashed body; large felids (tigers and leopards); the sun (<i>mōt tɲi</i>)
hap̄n̄	blood; wounds; human flesh; heart; liver
plyāʔ	(raw) fish; blood; wounds; human blood; raw meat; long- and pig-tailed macaque (<i>Macaca fascicularis</i> ; <i>Macaca nemestrina</i>) meat; the smell rising off a hot bitumen road after rain; rain on hot rocks; the flesh of domestic pork; crushed leaves of a k.o. wild ginger (<i>dpɔs planēw</i>); k.o. edible wild ginger (<i>dpɔs cadak</i>); k.o. rattan (<i>taliʔ ryāw</i>) when it is peeled; newborn child up to 3 months of age; stagnant water; mud; snakes and their sleeping places; boiled meat
sʔūr	(stale) cooked rice; meat; stale cooked starchy foods
pgus	uncooked rice; old uncooked rice; (dirty) clothes we wash; mushrooms and other fungi; old tubers; over-ripe mushrooms; dry bones
ʔisak	smoke from scorching turtle shells, or burning bones, hair or fur; wafting odour of scorched rice; cigarette and tobacco smoke; smoke from a fire; smell of a spicy stew; burnt cooking pots; burnt garlic; the crushed leaves of k.o. wild ginger (<i>dpɔs jmat</i>); k.o. hard resin (<i>damar kmayow</i>) when lit
hapak	k.o. wild ginger (<i>kseŋ</i>); k.o. of flower (<i>pak</i>); a fart; smell of us when we are hot; armpits; sweat; a carcass on the verge of decomposing
cʰŋās	raw binturong (<i>Arctictis binturong</i>) meat; raw meat of Malayan and brush-tailed porcupines (<i>Hystrix brachyuran</i> ; <i>Atherurus macrourus</i>); civet meat; k.o. wild ginger (<i>kseŋ</i>); water; starchy foods; k.o. fragrant leaf (<i>brʔɔp</i>); k.o. flower (<i>pak</i>); scorched rice; smoke from roasting meat; chili; garlic; onion; curry powder; turmeric powder; k.o. wild ginger (<i>trwɔʔ</i>); k.o. wild ginger (<i>dpɔs pʔas</i>); scent glands of the lesser mouse deer (<i>Tragulus kanchil</i>); the meat and urine of the pangolin (<i>Manis javanica</i>) because it eats ants and termites (<i>ptom</i> ; <i>blinaŋ</i> ; <i>darəŋ</i> ; <i>kasuʔ</i>) that have this odour; cough medicine; k.o. resinous incense (<i>kyjay</i>); kerosene; the <i>Varanus salvator</i> and <i>V. nebulosus</i> monitor lizards; the urine of cobras (<i>tijɔ ranʔkop</i> ; <i>tijɔ sleʔ</i>); the skin of the fruit of a k.o. wild ginger (<i>laʔom</i>); k.o.

Appendix A. (continued)

Exemplars	
	wild ginger (<i>dpɔs caciŋ</i>); k.o. hard resins (<i>kmayow</i> , <i>dagən</i> and <i>kantop</i>); k.o. wild ginger (<i>lawəŋ</i>) when burnt; dry wood; the smoke of some kinds of firewood
rʔom	durian flowers; ripe durian fruit; flowers, like <i>boŋaʔ kutŋ</i> and <i>boŋaʔ kapeh</i> ; cooked binturong (<i>Arctictis binturong</i>); fragrant leaves worn in women's waist bands; roasted meat; smoked fish; k.o. fragrant leaf (<i>brʔop</i>); fruit; perfume; smoked meat; flowers that grow on vines; fruit of k.o. wild ginger (<i>dpɔs lawēt</i>); bath soap; leaves of a k.o. wild ginger (<i>dpɔs cateŋ</i>); wild gingers (<i>dpɔs bnēm</i> ; <i>dpɔs maŋāŋ</i> ; <i>dpɔs pinaŋ</i> ; <i>dpɔs rihyoŋ</i>); roasted <i>Dioscorea orbiculata</i> tubers; <i>Styrax benzoin</i> incense; bamboo rat (<i>Rhizomys sumatrensis</i>); black giant squirrel (<i>Ratufa bicolor</i>); cooked otter meat; k.o. civet (<i>prgah</i>) when cooked; cooked bear meat when they have fed on honey; cooked dusky langur (<i>Trachypithecus obscurus</i>); agar wood; k.o. wild ginger (<i>pwpāw</i>); k.o. stewed wild banana; the coat of the white-handed gibbon (<i>Hylobates lar</i>); feathers; the smoke of some kinds of firewood
prʔət	stale cooked rice; stale starchy foods; stale urine; fallen, over-ripe fruit in the forest; stale boiled <i>Dioscorea hispida</i> tubers; first ripe durian fruit to fall in a season; yesterday's tea
mahoŋ	poisonous fruits; k.o. jackfruit (<i>caʔoy</i>); burning rubber; k.o. <i>Canarium</i> fruit (<i>snlih kawat</i>); meat of tortoises that have fed on <i>Canarium</i> fruit; banded langur (<i>Presbytis femoralis</i>) that have fed on a k.o. poisonous forest fruit (<i>kuməŋ</i>); Malayan tapir (<i>Tapirus indicus</i>) when being butchered; k.o. rattan (<i>taliʔ kawan</i>) when peeled; k.o. rattan (<i>taliʔ manāw</i>) when peeled; <i>Dioscorea hispida</i> tubers, when first boiled after being leached of poison; k.o. poisonous palm cabbage (<i>bʔət</i>); k.o. poisonous fruit (<i>Pangium edule</i>); pregnant women; afterbirth; babies
cʰŋūs	perfectly ripe edible fruits; fruits of some wild gingers (<i>dpɔs tuŋʔl</i> , <i>laʔom</i>); k.o. <i>Salacca</i> palm fruit
cʰŋōs	roasted or smoked meat; coffee
santən	a recently deceased corpse; s.o. close to death; s.o. seriously ill; s.o. who hasn't bathed; the sweat, saliva and urine of s.o. close to death
cʰŋīs	earth; clay; smell of the smoke from some hard resins (<i>damar kmayow</i> ; <i>knaʔhɔp</i> ; <i>tap tawɔ</i> ; <i>sipot</i> ; <i>ksum ptom</i>); the blowpipe mouthpiece because it is made from the resin <i>ksum ptom</i> ; coats of the Sumatran serow (<i>Capricornis sumatraensis</i>), the binturong (<i>Arctictis binturong</i>), the siamang (<i>Symphalangus syndactylus</i>), the colugo (<i>Galeopterus variegatus</i>) and all large felids; k.o. resinous incense (<i>kyjay</i>).
cʔak	roasted or burnt meat or fat; burnt rice; burnt bones
praʔāt	urine; stale urine; unwashed clothes; langur's urine
waŋī	synthetic perfume; shop-bought fragrance

Appendix B. Semelai odour terms with their corresponding exemplars

	Exemplars
rhom	unhusked swidden rice; newly harvested swidden rice; cooked swidden rice; roasting turtle; k.o. edible termite-fungus (<i>kulat ꦏꦸꦭꦠ ꦏꦏꦸꦃ</i> , <i>Termitomysces</i> sp.); k.o. edible termite-fungus (<i>kulat khkuh</i> , <i>Termitomysces</i> sp.); k.o. edible termite-fungus (<i>Termitomyces aurantiacus</i>); fruit; k.o. forest fruit (<i>jitan</i>); jackfruit; cassava; heritage taros; k.o. heritage taro (<i>rbɔl snibuŋ</i>); k.o. heritage taro (<i>rbɔl manek</i>); kinds of food; fish smoked in its skin; soap; k.o. medicinal plant (<i>capaʔ</i>); cassumunar ginger (<i>Zingiber cassumunar</i>); k.o. wild ginger (<i>sɾɨŋɔm</i> , <i>Elettariopsis</i> sp.); k.o. resinous incense (<i>kijay</i>); k.o. wood incense (<i>smburuʔ</i>); k.o. wood incense (<i>kayu manis</i>); <i>Styrax benzoin</i> incense; flowers; k.o. flower (<i>boŋaʔ bkwaliʔ</i>); perfume; talcum powder; edible tree shoots of k.o. tree (<i>bɨkoʔ</i>); k.o. leaf used as a flavourant (<i>slasih</i>)
chŋas	perfume; agarwood incense (<i>gaharoʔ</i>); <i>Styrax benzoin</i> incense; k.o. resinous incense (<i>kijay</i>); flowers; talcum powder; bath soap
waŋi	commercial perfume
dmkār	flowers; k.o. resinous incense (<i>kijay</i>); pleasant smell that one shouldn't draw attention to; oleo-resin; <i>Styrax benzoin</i> incense
rmŋas	s.o. wearing perfume; s.o. wearing strong perfume; <i>Styrax benzoin</i> resinous incense; durian; roasting; flowers; forest flowers; forest fruits; fallen ripe durian; fallen ripe horse mango (<i>Mangifera foetida</i>); kerosene as it becomes faint; petrol; stg (fragrant) that we can't see the source of; perfume; k.o. resinous incense (<i>kijay</i>); the smell of stg never smelt in the forest, that one shouldn't mention; k.o. wild mango; kerosene; white gas; traditional hair oil extracted from a k.o. tree (<i>mikoʔ</i>)
dmarom	s.o. wearing perfume; ripe fruit; fruit; fruit in the forest; flowers; flowers in the forest; k.o. forest flower (<i>bkaw hlalaŋ</i>); soap; <i>Styrax benzoin</i> incense; wafting fragrance from perfume, soap or talcum powder
plēŋ	raw fish; people who haven't bathed; kids who haven't bathed; k.o. fish (<i>kapeŋ</i>); pythons; crocodiles; water in Lake Bera; blood; monkeys; long-tailed macaques (<i>Macaca fascicularis</i>); dusky langurs (<i>Trachypithecus obscurus</i>); Mata kucing (<i>Euphoria malaiense</i>) fruit; k.o. fruit (<i>sampayan bajuʔ</i>); fish and aquatic animals; raw game; palm civet (<i>Paradoxurus hermaphroditus</i>); clothing; water; body dirt; squid; tinned mackerel when there's not enough tamarind added during cooking; vitamin elixir; bland watermelon; really weak tea with milk; k.o. edible amphibious snail (<i>gundvŋ</i>)

Appendix B. (continued)

Exemplars	
hayĩr	blood; blood (when) we give birth; newborn baby (when it is first born); land game when it's cut open; land game (meat); game that has blood; smell of a lot of human blood; blood of fish/turtles; human blood; land animals; fish; salted raw fish; rusty metal; lean game with no fat; offal
hamis	human blood; animal blood; blood; a lot of blood when large game (like wild boar or sambhur deer) is cut open; excessive menstrual blood; post-partum blood; blood of raw fish; stinking fish; some kinds of fish; unpleasant game (meat and fish); goats; land game; wild boar; corpse starting to decompose; snakes
c ^h ŋjir	urine; monkey urine; bat urine; bats; flying foxes; * animals; fish, like stingray; unwashed clothes; palm civet (<i>Paradoxurus hermaphroditus</i>)
hancēŋ	stale urine; odour of places where people repeatedly urinate
k ^h ləm	sweaty armpits; k.o. forest fruit (<i>cət</i>); sweat in the crease at top of thigh; baby
symɔy	long-tailed macaques (<i>Macaca fascicularis</i>); body (odour); the odour in the crease at the base of testudines' limbs
sʔit	decomposing animal; dead animal; decomposing of land animals; spoilt meat/fish; decomposing pig-tailed (<i>Macaca nemestrina</i>); dead chicken; dead dog; decomposing mouse; decomposing mouse in stored clothing; spoilt fish; catfishes (<i>tapah</i> ; <i>blidaʔ</i> ; <i>bawuŋ</i> ; <i>kliʔ</i>) or giant gourami (<i>kaloy</i>) preserved by smoking and fermentation; corpse; corpse as it starts to decompose; faeces; chicken faeces; house gecko faeces; dog faeces; cat faeces; a fart; Malayan weasel (<i>kukus</i> , <i>Mustela nudipes</i>); yellow-throated marten (<i>siŋaŋ</i> , <i>Martes flavigula</i>); Malayan sun bear (<i>Helarctos malayanus</i>); snakes; k.o. stink beetle; s.o who hasn't bathed at all; smell of a household-waste drain; rubbish; coagulated latex (<i>Hevea brasiliensis</i>); coffee; shrimp paste; k.o. civet (<i>musəŋ pulut</i> , <i>Paradoxurus hermaphroditus</i>); screwpine leaf (<i>Pandanus amaryllifolius</i>); stinkhorn mushroom (<i>Phallus indusiata</i>)
crus	dogs; mangey dogs; people with skin disease; skin disease, mange; s.o who hasn't bathed; k.o. pandanus fruit; poisonous things; coagulated latex (<i>Hevea brasiliensis</i>); bad cassava; undercooked food that still smells raw; stagnant water; poisonous mushrooms; damar torches when the damar is sticky
raŋhēŋ	spilt petrol; diesel; kerosene; white gas; decomposing body at its most rotten state; decomposing animal that has ruptured due to gas build up
c ^h ŋjis	turmeric root; k.o. fish (<i>klabaw</i>) which immerses itself in mud; fruit that isn't fully ripe; accidentally ingested oleo-resin (<i>damar</i>); k.o. dammar (triterpenoid resin) that is burnt; lesser mousedeer (<i>Tragulus kanchil</i>) hindquarters; animals;

Appendix B. (continued)

Exemplars	
	squirrels; bedbugs; k.o. domestic cockroach; k.o. rice field insect; k.o. stink bug (<i>klampun</i>); things burning; black pepper; unripe chili; k.o. edible shoots; a belch; k.o. wild mango; Malayan tapir (<i>Acrocodia indica</i>); elephants; Malayan sun bear (<i>Helarctos malayanus</i>); uprooted roots
ptüt	(new) water gourd; tigers; elephants; animals in the forest; tapir faeces; tiger faeces; elephant faeces; a fart; sweaty children; intestines/internal organs; catfish entrails; entrails of k.o. carp (<i>klabaw</i>); giant gourami (<i>Osphronemus goramy</i>) entrails; k.o. gourami (<i>tbakan</i>); pangolin (<i>Manis javanica</i>) skin; Malayan porcupine (<i>Hystrix brachyura</i>) skin; things we soak; over-soaked cassava; soaked cassava when it is first removed from the water; sap from the roots of the orchid <i>Apostasia nuda</i> ; fungi; dead dog; someone who hasn't bathed; stale sweat; small kids that haven't bathed; k.o. resin (<i>damar klulut</i>)
jʔɔp	day old food; old stew; old cooked rice; us when we haven't bathed; unwashed clothes; sweetened condensed milk; fruit set to ripen; sweat; stewed cassava; child that hasn't bathed; sweaty hair; the breath of babies fed infant formula
mʔɔs	old unhusked rice; harvested rice that hasn't been dried properly; fruit that isn't good any more; fungi; clothes stored for a long time; clothes that haven't been washed in a long time; things kept for a long time; wet clothing; clothes damp from sweat; damp things; damp fermented cassava meal that hasn't been dried properly; palm civet (<i>Paradoxurus hermaphroditus</i>); new water gourd; sweat; smell of unpleasant tasting foods
cʰɨɔs	roasting game; roast turtle; roast fish; roasting turtle shell; roast chicken; roasted things; foodstuffs; roasting eggplant; bones that we roast; the smell of roasting (wafting) to us; smell of frying; smell of cooking; smell of curry; barking deer (<i>Muntiacus muntjak</i>); mousedeer; fruit that smells more fragrant than <i>rhom</i> -fragrant; k.o. resinous incense (<i>kijay</i>); k.o. medicinal plant (<i>capaʔ</i>); agarwood incense when burnt; <i>Styrax benzoin</i> incense; orange-tree flowers; coffee; 2–3 month old babies, particularly their breath; breath of elderly Semelai who chew betel; dehusked swidden rice; cigarette smoke; edible mushrooms; the fragrant leaves of <i>Goniathalamus tenuifolius</i> ; k.o. wild banana (<i>srən</i>) heart; water consumed from a traditional <i>Licuala</i> sp. palm-leaf dipper; durian; k.o. hair oil (<i>mɨnak mɨkɔʔ</i>) extracted from a forest tree; binturong (<i>Arctictis binturong</i>); ripe bananas
haŋet	burnt hair; burnt rice; male wild boar meat; burnt food being roasted; burnt (over-roasted) game; burnt pots; burnt clothing; roasting turtle shell; burning bones; animal skin roasted until it's burnt; game being smoked over a fire that is too hot and gets burnt; over-fried food; cooking; burning plastic; burning

Appendix B. (continued)

Exemplars	
	rubbish; silver sharkminnow (<i>Osteochilus hasselti</i>); electrical short; goats; exhaust fumes
ɕŋɔl	roasted fish; roasting; vegetables which are roasted, like eggplant, or loofah gourd; roasted tortoise; roasted female wild boar; game that is roasting; cooked game; edible (things); smoke from a fire; charcoal; smouldering logs; s.th. being burnt; smell of people firing a swidden; ash; ash layer after firing a swidden; a newly fired swidden; soap; <i>Styrax benzoin</i> incense
ɕŋɕes	singed fur and skin of monkey game; singed hair; burning rubbish; burning hair, flesh, feathers, bones; small fish being roasted; jungle fowl or turtles being singed to remove the feathers/shell; urine of forest animals; peeled bitter gourd (<i>Momordica charantia</i>); the faint smell of burnt flesh of snakes or turtles that get caught when a swidden is being fired; faint smell of a distant swidden being fired; burning plastic; burning bones or turtle shells

* Monkeys, bats and flying foxes are arboreal and congregate in the tree canopy; their urine falls in a concentrated area.

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