How changing lifestyles impact Seri smellscapes and smell language

Carolyn O'Meara and Asifa Majid

Abstract

The sense of smell has widely been viewed as inferior to the other senses. This is reflected in the lack of treatment of olfaction in ethnographies and linguistic descriptions. We present novel data from the olfactory lexicon of Seri, a language isolate of Mexico, which sheds new light onto the possibilities for olfactory terminologies. We also present the Seri smellscape, highlighting the cultural significance of odors in Seri culture which, along with the olfactory language, is now under threat as globalization takes hold and traditional ways of life are transformed.

Keywords: Seri language, olfaction, semantic typology, olfactory naming, smell culture

Introduction

> "The women commented how pretty my self-dyed skirt was. I thought they were interested in my skirt and wanted me to give it to them upon my departure. (I frequently brought skirts to give as presents to friends and collaborators.) In order to dissuade them from this particular skirt (which I was fond of), I tried to convey it was stinky and dirty so they would not want it. *Hipnaail quih casa ha*, I said, using the smell verb root *-asa*. The women erupted in laughter. I had inadvertently used a vulgar term to describe the smell of my skirt, implying it had a shit-like odor. Later I found I should have used the smell verb *-heemt*, which is pragmatically less restricted, so as to prevent the hilarious and somewhat scandalized response I had inadvertently elicited."

Seri village of El Desemboque, Sonora, Mexico, 2006. O'Meara —- sits chatting with some local women.

In English, a stink is a stink is a stink. The vocabulary we use for our olfactory experiences is impoverished, and our sense of smell much maligned. Historically it has been viewed as inferior to other senses, especially in comparison to vision and audition (Darwin 1874; Plato 1961; Kant 2006). This view is perpetuated today by biologists and psychologists who look for genetic or neural anatomical explanations for these differences (Gilad et al. 2003; Olofsson & Gottfried 2015). Against this backdrop it is important to understand what role olfaction might play in different linguistic and cultural contexts (Classen, Howes, & Synnott 1994; Majid 2015).

The opening example alludes to a finer categorization of types of smells by Seris than by the visiting researcher, a native English speaker. Recent research suggests speakers of different languages may indeed have a different relationship to the senses than the average English speaker does (e.g., Majid & Burenhult 2015; Wnuk & Majid 2015). This paper presents the results of an in-depth investigation into the olfactory language and the smellscape of the Seri, a traditionally hunter-gatherer society of Mexico. In addition we show how the changing lifestyle and encroaching forces of globalization are impacting the experienced smellscapes, and the consequences this has for the language itself.

Re-examining the place of smell in language and culture

Smell is said to be "the lowest, the most animal of the senses" (McKenzie 1923:21), and it is claimed by many that it has little value across cultures (e.g., Buchan 1812; Stoddart 1990; Gardner 1993). Stoddart (1990:508) bemoans thus: "Why, then, has our evolutionary line not developed an odor culture to rival the rich visual and acoustic cultures found in all peoples of the world?". These ideas are usually grounded in putative biological facts. Historically humans, like other primates, are considered 'microsmatic' (having a poor sense of smell); instead they are considered visual creatures (Elliot Smith 1927).

The language for smell is claimed to be equally impoverished. As McKenzie (1923:59) argues: "That the effect of odor upon the mind is largely concealed is further illustrated by the curious fact that our native language does not possess a terminology descriptive of smells. We never name an odor; we only say it has a "smell like" something or other." He concludes: "smell is speechless" (60). In this, McKenzie echoes Henning (1916) who claimed "olfactory abstraction is impossible" and foreshadowed Sperber (1975) who stated: "There is no semantic

field of smells".

Recently these claims have been re-examined from multiple perspectives. Classen, Howes, and Synnott (1994) presented a radical rethinking of the sense of smell in their book *Aroma: The Cultural History of Smell*. Based on a reading of historical documents from the West, and a cross-cultural survey, Classen and colleagues argued odors play an important role in a variety of arenas from seduction to communion with the spirits. In their book, we find both The Andaman Islanders and the Dassanetch from Ethiopia use seasonal smells as a way of keeping track of time; the Desana of the Amazonian rainforest and the Serer Ndut of Senegal use smells to categorize people; and among the Bororo of Brazil and Batek of Malaysia foods are ingested and prepared in accordance with their smells. It seems smells are culturally significant in a myriad of ways.

At the same time, the ineffability of smells (cf. Levinson & Majid 2014) has also come into question. It appears the Aslian languages of the Malay Peninsula talk about smells frequently (San Roque et al. 2015), and even have dedicated vocabulary for different types of smells (Burenhult & Majid 2011; Tufvesson 2011; Majid & Burenhult 2014; Wnuk & Majid 2014). In fact, for the Jahai (one of these Aslian communities), smells are as easy to talk about as visual properties (Majid & Burenhult 2014). Jahai and Maniq seem to have some of the most elaborated lexicons for smell, with twelve (Jahai) to fifteen terms (Maniq); although the winner for sheer number of olfactory terms to date may, in fact, be Kumam (Nilotic; Uganda), which has been reported to have as many as twenty-one terms (cf. Storch 2004). For the Jahai and Maniq, smell terms are everyday vocabulary, known by all, and found across genres. The terms are "abstract": the names are not derived from a term for an odor-emitting source; and they refer to smells from a wide array of objects. For example, the term *pʔus* in Jahai refers to moldy or musty

odors, such as the smells of decaying vegetation, old dwellings, mushrooms, stale food, and some types of dried plants (Burenhult & Majid 2011). Smell terms in these languages form a cohesive lexical field (Wnuk & Majid 2014).

The fact of specialized vocabulary for smell is not unique to this part of the world, as alluded to above. One of the earliest descriptions suggesting the possibility of a smell lexicon comes from Aschmann (1946) on Totonac, also spoken in Mexico. In a brief report, Aschmann presented eight different roots used to describe "[t]he exact shade of smell" (p.187). However, some of these words overlap with taste (e.g., *-uʔt-* 'sour smells'; *-iʔh-* 'smells that leave a taste in the mouth'), and so it is not so clear that Totonac is a strong counter-example to the claim there is no semantic field of smell. In a similarly succinct article, Hombert (1992) claims five languages in the Gabon have dedicated smell vocabulary, and lists between five and nine terms for each language. More detailed and contextualized descriptions of olfactory language and cultures can be found for the Kapsiki/Higi of North Cameroon and North-Eastern Nigeria by van Beek (1992) and two Amazonian languages, Matsigenka and Yora or Yaminahua by Shepard Jr. (1999).

One interesting aspect to the slowly accumulating literature is the close connection between olfactory lexicons and local cultural preoccupations. For example, the Kapsiki/Higi smell lexicon can be characterized in terms of social hierarchy and inclusion/exclusion (van Beek 1992); whereas the Aslian smell lexicons do not seem to be attuned to this social dimension. Instead, the Maniq smell lexicon appears to be closely tied to notions of pleasantness and dangerousness, which in turn reflect cultural beliefs about health and wellness and the local religious ideology (Wnuk & Majid 2014). In sum, these studies have renewed the discussion on the significant role that odor categories can play in daily life, especially as it pertains to smaller,

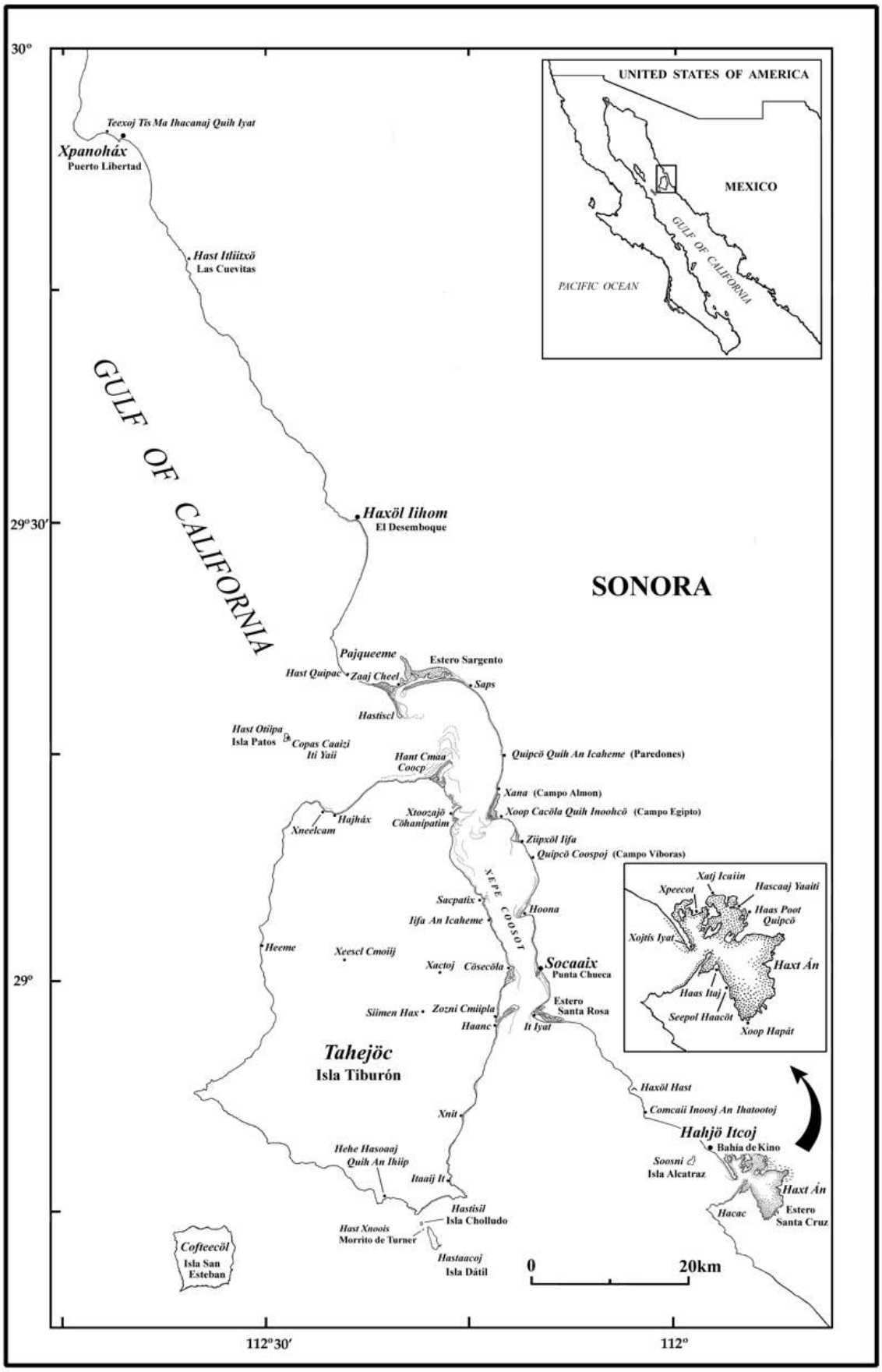
less-studied, less Westernized societies.

Changing environments; changing languages

One striking feature of previous studies has been the preponderance of hunter-gatherer communities attested as having elaborate olfactory lexicons, while modern urban communities seem to be lacking them (e.g., Shepard Jr. 1999; Majid & Burenhult 2014; Wnuk & Majid 2014; Demolin et al. ms). This raises the question whether some cultural or environmental features might be particularly conducive or unfavorable for fostering smell language. Here we provide new evidence of olfactory terminology among a different community – the Seri, or *Comcaac*, as they call themselves. The Seri traditionally had a nomadic hunter-gatherer lifestyle, living in temporary campsites in the Midriff Island and Sonoran Desert regions, as well as along the coast of what is now Sonora. Historically, the Seri never practiced agriculture in any systematic way, even when under pressure from colonial forces.

The current lifestyle of the Seri, however, does not reflect the semi-nomadic lifestyle of yesteryear. Today Seri live in two small coastal villages located along the Gulf of California in the state of Sonora, Mexico: Punta Chueca (*Socaaix*) and El Desemboque del Río San Ignacio (*Haxöl Iihom*), the locations of which are shown in Figure 1. Families live in cement block houses built in the late 20th century. Most Seri no longer rely on hunting and gathering for their subsistence today, but rather, buy food items in stores. Instead of hunting for sea turtles by night, men participate in small scale commercial fishing; they trap crabs and dive for scallops. This emulates to some extent their previous lifestyle, but adjusted to their participation in the cash economy. Men occasionally occupy former temporary campsites when necessary. Some women continue to gather plant products (e.g., cactus fruit, cholla fruit, mesquite pods, etc.) from the

desert in order to make medicines, or for food. Despite these encroaching changes, elders reminisce about times when they and their families moved between camps; they remember drinking liquid from the barrel cactus while in the desert when there was no other source of freshwater; they recall depending upon plants and animals – in the desert and in the sea – for their day-to-day subsistence.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SONORA
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Xpanohάx
Puerto Libertad
Hast Itlüitxö
Las Cuevitas
Haxöl Iihom
El Desemboque
Pajqueeme
Estero Sargento
Hast Quipac
Zaaj Cheel
Saps
Hastiscl
Hast Otiipa
Isla Patos
Copas Caaizj
Iti Yaii
Hant Cmaa
Coocp
Quipcö Quih An Icaheme (Paredones)
Xana (Campo Almon)
Xtoozajö
Cöhanipatim
Xoop Cacöla Quih Inoohcö (Campo Egipto)
Hajhάx
Xneelcam
Ziipxöl Iifa
Quipcö Coospoj (Campo Viboras)
Xatj Icaiin
Xpeecot
Hascaaj Yaaiti
Haas Poot Quipcö
Xojtis Iyat
Haxt Án
Haas Itaj
Seepol Haacöt
Xoop Hapát
XEPE COOSOT
Sacpatix
Hoona
Iifa An Icaheme
Heeme
Xeescl Cmoiij
Xactoj
Cösecöla
Socaaix
Punta Chueca
Siimen Hax
Zozni Cmiipla
Estero
Santa Rosa
Haanc
It Iyat
Tahejöc
Isla Tiburón
Haxöl Hast
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Xnit
Hahjö Itcoj
Bahia de Kino
Hehe Hasoaaj
Quih An Ihiip
Soosni
Isla Alcatraz
Itaaij It
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Hastisil
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Santa Cruz
Hast Xnooix
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Isla San
Esteban
Hastaacoj
Isla Dátil
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20km

Figure 1. Approximate location of the two Seri villages of El Desemboque del Rio San Ignacio and Punta Chueca, including Tiburon Island, which is currently a nature preserve (From Shells on a Desert Shore by Cathy Moser Marlett. © 2014 The Arizona Board of Regents. Reprinted by permission of Cathy Moser Marlett.).

When communities of speakers move to a new environment or change their way of life, they are no longer exposed to the odors, flavors, sounds and sights that used to inundate them. Not only are these changes eroding human knowledge of the natural world, such as ethnobiological knowledge of plant and animal species (Harrison 2007:15), but knowledge of sensory experiences become culturally obsolete too (e.g., see Feld 2012 on changing soundscapes). Within the literature surrounding language endangerment and language death, it has been observed that urbanization and immigration from rural to urban areas can have a negative effect on languages spoken by smaller-scale societies (Harrison 2007:14). In fact, even in English there has been a loss of knowledge about folk biological domains in the 20th century, characterized by fewer and less precise references to, for example, trees (Wolff et al., 1999). This change appeared around the Industrial Revolution, where many people shifted from rural to urban dwelling, and suddenly had far less direct exposure to the natural world. What impact, if any, this has on sensory vocabularies is relatively unexplored. There is suggestive evidence from de Sousa (2011) and Beer (2014) that societal changes as a result of globalization can lead to rapid shifts in the language of perception. For example, de Sousa (2011) found that younger speakers of Cantonese produced many more terms for vision than older speakers, but the same youngsters did not produce the fine-grained distinctions in smell and taste the older speakers did. He argues this is the result of the rapid economic development and its resulting higher levels of

literacy, on the one hand; and the increased sanitization and changes in food culture, on the other.

This background makes this study of the Seri olfactory lexicon both timely, and of particular scholarly interest given the changes in their way of life since the second half of the 19th century. We are able to gain insight into the traditional culture and linguistic practices, while also characterizing the changing environments and ways of being, and their likely linguistic consequences.

The Seri language

Seris speak the Seri language or *Cmiique Iitom*, literally 'with which a Seri person speaks'. Adults use the Seri language in daily interactions, and children are still actively acquiring it. There are changes afoot, however. Education in local schools is in Spanish, the majority language of the area. Power line electricity arrived in the villages in the last 10 years, giving children easier access to television programs in Spanish. Portable air conditioning units mean children are often found inside houses, where televisions sit. This shift from Seri to Spanish is taking effect slowly, and is particularly evident with respect to lexicon related to areas where cultural activities are no longer practiced. This is of particular relevance in the sphere of olfaction where cultural practices featuring smell identification are no longer exercised.

Seri is considered a language isolate (Marlett 2007, 2008a). Although there are loanwords from the neighboring Uto-aztecan languages, no genetic relationship has been established between Seri and these languages. Formerly, Seri was considered a member of the contested Hokan stock (Kroeber 1915), which includes the Pomo languages of California, the Yuman languages of the Baja peninsula and southwestern United States, as well as Tequistlateco or

Chontal of Oaxaca. Nevertheless, there is not sufficient evidence to conclusively establish its status in this linguistic stock (Marlett 2007, 2008a).

Seri is reasonably well documented in terms of its phonological, morphological, syntactic and basic lexical properties. There is a trilingual dictionary of Seri-Spanish-English, a sketch grammar (Moser & Marlett 2005, 2010), and a detailed grammar in preparation (Marlett ms.; see also Marlett 1981, 1984, 2010, 2012). For the most part we follow the orthography of Moser and Marlett (2010).

Seri has 26 phonemes, including a set of four vowels, each with a long counterpart, making a total of 8 vowel phonemes and 16 consonant phonemes (Marlett ms. 948). The grammar contains various word classes, including nouns and verbs, which are open word classes, as well as adjectives, pronouns, adpositions, particles, etc., which are closed classes. In typological terms, Seri is best considered a synthetic language with a preferred word order of SOV, i.e., it is a head-final language. Seri shows characteristics of a head-marking language: arguments are marked on the verbal head and the possessor is indicated on the possessum in cases of inalienably possessed nouns. Additionally, Seri is a pro-drop language; number and person information can be found in pronominal prefixes on the verbal root. See Marlett (2008c) for further typological information on the Seri language.

Seri perceptual predicates

Before describing the Seri odor lexicon in detail, it is helpful to first have an overall perspective of where odor terms fit in the domain of sensory language. We begin by looking at the basic verbs used in sensory perception in Seri, following Viberg (1984). Table 1 illustrates the verbs used to describe the five sensory modalities, divided according to the semantic

components of activity (e.g., looked at birds), experience (e.g., saw birds), and copulative expressions (e.g., looked sad).[i] Activity and experience components are described with transitive verb roots, whereas the copulative is expressed with either intransitive stative verb roots or derived passive verb forms.

	Activity	**Experience** (state/inchoative)	**Copulative** (state)
sight	*-oocta*	*-aho*	*hapacta*
hearing	*-queecöl*	*-ii*	
touch	*-Cii*		*-ahii*
taste	*-pii*		*-apii*
smell	*-sii*		*-asii*

Table 1. Paradigm of Seri perception verbs, following Viberg (1984)

Seri follows the widely-attested pattern of finer discrimination in sight and hearing, than in touch, taste, or smell. Table 1 is slightly misleading, however, since it does not display the full resources of the language. Perceptual attributes are predominantly coded as verbs or verb roots, not adjectives. The Seri closed class of adjectives contains around only 20 items (Marlett ms.). These adjectives cannot be inflected with verbal morphology. They include terms like *áa* 'true', *aapa* 'strong', 'enormous', *coox* 'all' and *xahxaii* 'somewhat like' (Marlett ms. 831). Lexical items expressing concepts similar to those expressed by adjectives in English are intransitive stative verbs in Seri. These roots can combine with verbal morphology that marks person and aspectual categories, for instance.

Basic color terms are stative verb roots: e.g., *-ooxp* 'be white', *-oopol* 'be black', *-heel*

'be red', *-ooil* 'be grue', etc. Similarly, shapes of objects are expressed with stative predicates like *-peetij* 'be round', *-tocnij* 'be round', *-jip* 'be flat', *-ihtj* 'be cone shaped', *-eefe* 'be hook shaped', *-apxeezc* 'be wedge shaped', etc. There is also further elaboration of verbs of hearing in the copulative category; for example, *-ipon* 'make sound with voice', *co-eepcö* 'make sound like footsteps', *-iinla* 'make sound [like bell]', -C*ah*[ii] 'make musical sound', *-afiix* 'make mysterious sound' (like at an abandoned camp), *-oqueesc* 'make soft sound, like footsteps', and *-iisc* 'make soft sound like dragging feet' (Moser & Marlett 2010). And, of particular interest here, there is further elaboration of olfaction too.

Olfactory language in Seri

Seri smell terms were compiled by consulting existing descriptions of the language including the trilingual Seri-Spanish-English dictionary (Moser & Marlett 2005, 2010), and reviewing fieldnotes the first author had compiled over the years. In order to understand their semantics and usage further, we used a multi-method approach combining observational and elicitation methods.

First, everyday conversations were carefully monitored for the spontaneous use of smell terms. These examples highlight that smells are relevant in day-to-day life. They also provide further context in order to understand the function of smells and the language used to describe them in Seri. To supplement the conversational data, an elicitation task was also conducted. Seri speakers were asked to list exemplars of the smell terms listed in the first column of Table 2 by asking, for example, *Ázya theemt*? 'What 'stinks'?'[iii], where we substituted the specific smell verb under question (in this case *-heemt*) in order to elicit exemplars for each verb root.

Exemplars listed early or by many speakers can be considered psychologically salient (cf.

Bousfield & Barclay 1950; Wnuk & Majid 2014). Data was collected from five Seri speakers using this method. After the exemplar listing, speakers were also asked if there were any smell terms missing in the list. No additional terms were added using this procedure. Table 2 provides a list of the elicited exemplars for each smell term.

Verbal predicate	**Possible referents for subject of verb**
-heemt	feces, rotten food, dead animals, sea lion, whale, dolphin, shark, things that come from the sea, shoes, dogs, smoke, also used to refer to the odor of a house cleaning product (pine scented, in this case), *xtisil* (an aromatic perennial in the daisy family), skunk, the liver of the (less common) triggerfish that used to be found off the shores of Tiburon Island
-asa	same exemplars listed as *-heemt*, but according to one speaker, shows little respect and can be offensive, you can only use it in certain contexts, can also be used in humorous contexts
-con	smoke, smell of food cooking, spoiled beans, onion, smell when you cook an immature green sea turtle known as *cooyam*
-cozl	when food goes bad, when sweet food goes bad or rancid, such as honey or sweets
-icotj	wet clothes (when they sour), mildewy, musty
-íxepxat	body odor (only of the *Cocsar* 'non-Seri Mexican'), desert lavender, (Note that this verb root is archaic, no longer used in daily conversation)
-cotxta	shirt, clothes, burnt beans, a plant called *hehe ccotxta*, body odor (only from the *Cocsar* 'non-Seri Mexican' and other foreigners)
ix -asii	(lit. smell of its liquid) unpleasant body odor of a person, herb called valerian, and other unpleasant odors
ihasii -iipe	perfume or cologne, clothes, interior of a house (with a residue of a scented house cleaning product like *Fabuloso*), Seri person, mesquite tree flowers, elephant tree

Table 2. Verb roots in the Seri olfactory lexicon and their exemplars as listed by five native Seri speakers — shaded items are not monomorphemic

The majority of items in the Seri odor lexicon are intransitive monolexemic stative verbs. The first seven verb roots are also monomorphemic. The terms refer predominantly to non-fragrant, possibly unpleasant odors. It would be a mistake, however, to think these terms only categorize degrees of pleasantness. Rather they appear to distinguish different qualities of smells; just as reported for Jahai and Maniq (Majid & Burenhult 2014; Wnuk & Majid 2014). Seri smell verbs do not lexicalize the source of an odor and are not used exclusively with one particular referent, as can also be seen in Table 2.

The Seri verbs are similar to Jahai and Maniq terms in being general over sources. There also appear to be intriguing parallels in the categories themselves. For example, *haʔĩt* in Maniq and *-cozl* in Seri can refer to the smell of rotting food and in *paʔ̃ɔʔ* Maniq and *-icotj* in Seri can refer to the smell of wet clothes. So these smells are, perhaps, of salience and import to both communities. But the categories also differ in some respects. This could be attributed to the different environments inhabited: the plants and animals in the Seri region are different to those found in the Peninsular Malaysia tropical rainforest. But that cannot be the whole story. For example, Jahai and Maniq both have terms to cover the smell of fresh blood and raw meat. These smells would be as available and relevant to the Seri, yet there is no dedicated lexeme to express this particular odor quality. This raises the question of what types of odors are lexicalized in which communities; an issue to which we return later.

For the Seri speakers the smell root *-heemt* elicited a large number of exemplars,[iv] while other verb roots were used more sparingly in the task. Some of these uses will be described here. In response to the question *Ázya theemt*? ‘What ‘stinks’?’, a speaker listed the odor of rotten food and feces, but also the odor of sharks, as is shown in (1).

(1) *Hacat quih xoheemt!*

shark DEF.ART.SG.UNSPEC EMPH.stink

'Sharks stink!'

As part of the elicitation, speakers were probed about the possibility that other smells not spontaneously listed could also be included under specific smell verbs; for example, *Hacat cmaam quih ipxasi quih, tiix theemt?* 'Diamond sting ray meat, does that stink?' This allowed us to test the specificity of the possible smell exemplars. In this case the speaker rejected the predicate *-heemt* (by including the negative prefix on the verb), as is shown in (2).

(2) *Hacat cmaam quih i-pxasi quih yo-m-heemt.*

shark female DEF.ART.SG.UNSPEC 3POSS-flesh DEF.ART.SG.UNSPEC DIST.PAST-NEG-stink

'Diamond stingray (lit. 'female shark') meat does not 'stink'.'

As we saw in the opening story, *-asa* differs pragmatically from *-heemt*, but the exemplar listing suggests the two have an overlapping extensional range. Moving to the next verb in Table 2, speakers indicated *-con* is used to describe the odor of smoke and food cooking. Further elicitation revealed this term can also be used to describe the odor emitted when cooking meat from the *cooyam* (immature green sea turtle). However, this meat is not considered to be tasty. In fact, its medicinal use requires the fat is burned, and that the patient is exposed to the smoke of the fire where the fat is burning (Felger & Moser 1985). Similarly, when beans have spoiled and are inedible, they can also be described as emitting *-con*, as is shown in (3).

(3) *Ziix is cquihjö ooznij* *cah* *miizj* *to-m-mam,* *hax*

stewed.beans DEF.ART.SG.FOC well REAL.DEP-NEG-cooked quite

i-con *cah* *ipahit* *iicp*

3POSS.OBL.NMLZ.stink DEF.ART.SG.FOC OBL.NMLZ.PASS.eat 3POSS.side

cö-t-m-iipe *ho.*

3IND.OBJ-REAL.DEP-NEG-good DECL

'When beans aren't cooked well and they stink, it is not good to eat them.'

(Moser & Marlett 2005:170; the morphological analysis is our own)

Another verbal predicate found in the Seri smell lexicon worth mentioning is *-cotxta*. This predicate is of interest given the referent types it can be used to describe; e.g., the unpleasant body odor of non-Seris, as well as the strong smell of burnt beans and stinky clothes. As such, this predicate is another example of how Seri smell predicates are not tied to a particular odor source.

The two final expressions listed in Table 2 contain the general smell verb *-asii* and are morphologically and semantically transparent to speakers. The expression *ix -asii* literally means 'smell of its liquid' but has become lexicalized so as to refer to unpleasant body odors of people or the odor of the herb valerian (*Valeriana officinalis*). The second expression *ihasii -iipe* contains the oblique nominalized form of the derived intransitive verb *-asii* 'smell of' (where *ihasii* means 'its smell') in combination with the verbal root *-iipe* 'good', and is used to describe the smell of clean clothes, clean house, perfume, etc. In contrast to *ix –asii* which does not explicitly indicate anything about whether the odor is good or bad, *ihasii -iipe* explicitly indicates pleasantness. We include this expression in Table 2 together with the smell predicates

as it is frequently used to refer to pleasant odors in Seri.

The general smell predicate *-asii* is used when producing source-based descriptions. Speakers first mention the item with the particular odor (i.e., the source object) and then use the finite form of the general intransitive smell verb *-asii* 'smell of'. This strategy is illustrated in (4).

(4) ¡*Mitaamt* *coi* *sliitxcoj* *xasii*!
2POSS.shoe DEF.ART.PL skunk EMPH.DETRANS.smell
'Your shoes smell like skunk!'

Olfactory naming in Seri

In order to further probe how smells are linguistically described, we conducted an odor naming task. Twenty speakers described 18 different odors (pineapple, apple, banana, lemon, lavender, leather, eucalyptus, lilac, smoked meat, peppermint, mushroom, rose, sesame, soy sauce, turpentine, vinegar, garlic, and clove), presented using "Sniffin' Sticks" (Hummel, Sekinger, Wolf, Pauli, & Kobal, 1997). These are marker pens containing an odorant instead of ink. People smell the odor by removing the marker cap and sniffing the tip. The odors were chosen to be as diverse as possible within the limits of those available in this standardized set. Some of them were a priori chosen because of their relative familiarity (e.g., lavender), and others because they would not be familiar (e.g., sesame), and thus might inform us how, and if, speakers extend their olfactory lexicon.

The sticks were presented one at a time in a fixed random order, with at least 30 seconds between odors. Participants smelled each stick for as long as they wanted. They were then asked in Seri "What smell is this?" (*¿Tiix, zó tasii?*), with the generic smell verb. Responses were

recorded using an audio-recorder, and paper and pencil. Before testing, Seri speakers were informed about the protocol and consent was obtained. At the end of the task people were debriefed regarding the experiment and asked if they could think of any other smells not included in the task.

The naming task elicited many of the smell verbs, thus providing additional information regarding the usage of these predicates. Speakers used five of the seven smell verbs, including -*con*, -*cotxta*, -*cozl*, -*heemt* and -*icotj*. Together these verbs made up 12% of responses. The most frequently used verb root was -*heemt*, used 33 times by 14 of the 20 participants. It was frequent for vinegar and garlic odors. The next most frequent term was -*cozl*, used eight times by eight participants to describe mushroom and vinegar odors. The verb root -*icotj* was used four times by three different participants for turpentine and leather odors. This usage pattern suggests the verbs are focused primarily on negative smells. Further evidence in support of this comes from the use of evaluative terms, such as -*iipe* 'be good' (9% of responses) and -*miipe* (the negative form of –*iipe*) 'not be good' (2% of responses). The form -*miipe* was used for sources like garlic, smoked meat, and vinegar which overlaps with the extension of the dedicated smell root –*heemt*. This suggests, perhaps, that -*heemt* itself has a negative evaluation as part of its meaning. Positive evaluations were used primarily in response to fruit and floral smells, although some people also used -*iipe* in response to the smell of leather.

In general, the smell verbs were not produced for aromatic odors, such as flower and fruit fragrances. Instead these odors elicited a different linguistic strategy, namely source-based descriptions (e.g., "smells like banana"). The majority of descriptions, 69% of responses, were source-based. Source-based descriptions were prevalent with odors of sources recently introduced to Seri culture, like lemon, garlic, vinegar and apple. In these cases some Seri

speakers opted for loanwords from Spanish to describe the source of the odor (e.g., *limón* 'lime', *ajo* 'garlic', *vinagre* 'vinegar', *manzana* 'apple').

It was not uncommon for speakers to make reference to specific plant and flower species; for instance *hantoosinaj* 'sand verbena' (4 responses), *xeescl* 'desert lavender plant' (4 responses). Both of these plants were used traditionally as aromatic adornment inside of Seri dwellings. In total 21% of responses referred to plants (both generic terms and specific plant names) and 9% referred to flowers (both generic and specific).

Reference to plants and flowers in response to odor stimuli differed between older and younger speakers. For example, speakers under 40 years only made reference to a traditional plant or flower term in 4 responses, whereas over 40 years of age there were 40 such responses. In order to test whether there was a systematic difference between older and younger speakers in how they named smells, we looked at the relationship between age and the likelihood of producing a Seri smell verb, a traditional specific plant name, a general plant name, or a Spanish loanword in the naming task. Speakers' age could only be approximated, so we categorized age by decade; e.g., 10-20 years, 20-30 years, etc, and treated age as a rank order variable. There was no relationship between age and likelihood of producing a Seri smell verb $\rho(18) = 0.88$, $p = .711$ or a general plant term $\rho(18) = 0.11$, $p = .644$. But, older people were much more likely to name smells using a specific traditional plant name $\rho(18) = 0.621$, $p = .004$, while younger people were much more likely to name smells using a Spanish loanword $\rho(18) = - 0.507$, $p = .02$. In fact, the more likely a person was to use Spanish loanwords, the less likely they were to name traditional plants $\rho(18) = -0.598$, $p = .005$. This illustrates the changing patterns of the odor landscape and language.

Summary

The results of the tasks reported here show that even though Seri speakers have abstract smell verbs in their lexicon, they do not exhaustively use these terms when describing odors. Seri smell verbs do not cover floral or aromatic smells, or the smells of many fruits. For these sorts of odors, speakers resorted to using source-based descriptions or positive evaluations. Instead, the lexical field of Seri smell verbs distinguishes different sub-types of unpleasant odors. This differs from Jahai and Maniq, for example, where the odor lexicons seem to encompass a larger part of the odor space, including positive odors. There were some tantalizing parallels in the semantics of a couple of the Seri smell verbs and those of Jahai and Maniq; e.g.,Seri *-cozl* and Maniq *haʔĩt* can refer to 'smell of rotting food'; Seri *-icotj* and Maniq *paʔ̃ɔʔ* can refer to 'smell of wet clothes'. But there are also smell categories in Seri that have no clear parallel in the Aslian languages.

Documenting the disappearing smellscapes of the Seri

The Seri people

At the turn of the last century there were reported to be around 200 Seri individuals living in the region, whereas the current population is close to 1,000 (Marlett ms.), based on local estimates (a number larger than the 2010 national census of 807 individuals). The population has been growing as access to modern healthcare has increased and epidemics have been controlled. This shift has also coincided with a change in modes of production. Up until the mid-20th century many Seri families still lived a semi-nomadic lifestyle, moving from one temporary camp to another, each camp consisting of one to fifteen nuclear families. Their movements depended upon the availability of natural resources, including freshwater sources (Schindler 1981). People

would set up temporary camps and construct structures from ocotillo branches and cover them in brush, seaweed, sea turtle carapaces, or whatever suitable material was on hand. These structures, also known as an *haaco haheemza*, primarily served as windbreaks from the ever-present gusting winds, or were used as storage. A large portion of daily life, in fact, took place out of doors (Bowen & Moser 1995).

Seri diet traditionally included sea turtle, shellfish, small land mammals, desert plants and seeds of eelgrass (*Zostera marina*) (Felger & Moser 1976; Felger, Moser & Moser 1980; Bowen 1983; Felger & Moser 1985). The Seri people are particularly known for having been consumers of the seeds of eelgrass. In the springtime shoots break off the plants and float to the surface of the ocean. Seris collected the shoots, dried them in the sun, and processed the seeds into flour (Felger & Moser 1985: 376-382). They also ate fruit and seeds from all varieties of columnar cactus in their territory. The juice of the fruit was also fermented to make wine, a practice still employed today around the time of summer solstice. Seri also ate pods from the mesquite tree, generally processing it into a powder to be used in *haaztoj*, a porridge-like drink (Felger & Moser 1971). The heart of the century plant [*Agave subsimplex*] was another food source (Felger & Moser 1970). In the late winter they would cut out the heart of the century plant and roast it, resulting in a sweet treat.

The odor landscape

The Seri territory extends along the coast of the Gulf of California, a body of water that in older times Seri families would traverse in reed balsas, sometimes making camp on the islands in the Gulf. While much of Seri traditional life revolved around the sea and the natural resources it brings, there was also considerable interaction with the inland desert regions, mountains, and

coastal estuaries (Schindler 1981). The original rangeland of the Seris is believed to be much larger than their current territory, stretching from south of Guaymas to north of Puerto Libertad, both in the state of Sonora, as well as Tiburon Island, a part of their traditional homeland (see the map in Figure 1 for locations).

Today the two Seri villages are located on the mainland coast. Proximity to the sea is marked not only by the strong wind gusts and the sounds of waves, but also the smell of the sea and its contents washed up on the beach. The beach in front of the Seri villages is redolent of docked boats and the catches they transported to shore. Nets and traps near the boats and houses smell equally pungently of fish and myriad other creatures they caught. When the winds blow, these smells associated with the sea and fishermen travel around town.

The dynamicity of the Gulf of California is ever present in the villages due to the dramatic tidal range (around two meters), leaving large intertidal zones exposed during low tide (Marlett 2014: 7). Also present along the coast are estuary mud flats surrounded by mangroves (Marlett 2014: 6), which can at times be stinky as plant matter decomposes in the mud flats.

Summers in the inland Sonoran Desert, where the Seri territory is located, tend to be hot and dry. The coastal region, however, is cooler due to breeze from the water. Hot summer months are interrupted by summer rains, known in the neighboring southwestern part of the U.S. as monsoons. These bring much needed water to the dry desert. After a rainstorm the desert takes on new smells, especially noticeable when creosote bushes become wet and emit a unique smell. The rains are followed by a period of growth, and the desert blooms with colorful and aromatic wild flowers. As young people no longer actively forage for plants in the desert, they seldom chance to encounter these smells and they miss the opportunity to acquire terms for the aromatic plants and flowers from the older generations who know them well.

Dwellings, past and present

The switch to concrete block housing from the traditional Seri dwellings is another locus of a changing smellscape. As mentioned previously, traditional dwellings consisted of temporary structures constructed of brush and other organic materials. For example, a basic ramada-like structure provided shade cover without much protection from wind gusts. In contrast, the *haaco haheemza* was a tad more substantial. It consisted of bent ocotillo branches shaped in an arc. To create a roof over the structure, the arc was covered by brush, plant material, animal hides, as well as sea turtle shells. This structure is still occasionally used during festivities so games can be played in the shade.

Roofs were used for drying meat, especially fish (Schindler 1981:140). People would also set up drying poles outside dwellings to promote faster drying through enhanced exposure to sun light and air (Schindler 1981:151-55).

Figure 2. Photo by Edward H. Davis of the wife and child of Manuel Encina in front of a traditional brush shelter. National Museum of the American Indian, Smithsonian Institution (P03773).

Women frequently cooked on fires outside dwellings in the open air, sometimes with an accompanying wind break in order to stop strong winds from affecting the cooking process. Sea turtles, particularly green sea turtles, are a delicacy. One traditional cooking method is to place the sea turtle with its carapace toward the ground, pile brush on its plastron, and light the brush on fire. This roasts the sea turtle externally. Once the brush fire had burned down, the plastron was removed and the meat stuck to it was passed around to eat on the spot. Larger pieces of meat

were cut off for cooking at individual hearths (Felger & Moser 1985: 48). Another common way to cook sea turtle meat involves setting a fire on the ground and standing the sea turtle carapace up with all of the meat inside facing the fire. This way the meat roasts without being in direct contact with fire. All in all, the smells of smoke and of meat slowly roasting permeated everyday camp life.

Nowadays some families have metal drums converted into grills outside in which they burn firewood in order to grill meat, make grilled or fried bread, and so forth. Such grills are generally located under ramadas (roofed shelters with open sides) made of cloth or plastic. Other families have switched completely to gas ranges. The smell of smoke and food being cooked over fire is no longer a salient presence in the daily life of the newer generations of Seris. In fact, cooking has become a more private activity that takes place indoors.

Traditionally the insides of brush houses used by the Seri were adorned with sand verbena flowers (*Abronia villosa*) and evening primrose (*Oenothera arizonica*) (Felger & Moser 1985:117). Both plants are known for their flowers having pleasant aromas. In response to the smell identification task, some speakers used terms for the flowers of these plants. However, more recently the Seri seem to have shifted from the natural aromas of flowers to synthetic aromas provided by modern cleaning products to perfume their interiors. In particular, the floor cleaning solution *Fabuloso*, commonly found and used throughout Mexico, is popular. Although various *Fabuloso* scents are available – herbal (lavender, mint), floral, fruit, “fresh”, ocean – Seris have a marked preference for the floral and herbal scents for the insides of their homes, in line with their traditional smellscapes. Smells that are strongly associated with cleanliness in the American and European context, such as pine (Kerr, Rosero, & Doty, 2005), are not considered pleasant by the Seri. For example, in (5) a first speaker had smelled a pine-scented house cleaner

and had indicated uncertainty about its pleasantness, to which the second speaker responds unequivocally 'It stinks!'.

Not all new smells are responded to so negatively. Seri speakers described odors of Mexican cleaning and personal hygiene products like floral scented *Fabuloso* and perfume as "good", as illustrated in (6) where a speaker comments positively about a person smelling like perfume. Note that the subject of the predicate corresponds to the bearer of the odor.

(5) ¡*Xoheemt*!
EMPH.stink
'It stinks!'

(6) ¡*Hax* *ihasii* *quiipe* *quih*
water 3POSS.OBL.NMLZ.DETRANS.smell SBJ.NMLZ.good DEF.ART.SG.UNSPEC
imxasii!
2SUBJ.EMPH.DETRANS.smell
'You smell like perfume!'; lit. 'water whose smell is good'

The use and manipulation of odors

Aside from the decorative or aesthetic use of odors to perfume interiors of dwellings, odors also play a critical role in traditional Seri curing practices. Members of the older generation, especially those with family members who were practicing shamans, can still describe practices involving the use and manipulation of odors and some of the practices survive as described in the Seri ethnobotany (Felger & Moser 1985).

Plants with aromatic foliage, such as genera *Bursera*, *Hymenoclea*, *Larrea* and *Porophyllum* contain terpenes and other volatile oils or resins, and are particularly valued by Seris for their medicinal properties (Felger & Moser 1985:109). For example, branches and foliage from the desert lavender *Hyptis emoryi* were a crucial component of curing practices. Like the plants described above, desert lavender is incredibly aromatic and has terpenoids, with at least 34 volatile oils (Tanowitz et al. 1984).

Figure 3 shows a shaman curing an infant using branches from the desert lavender plant.

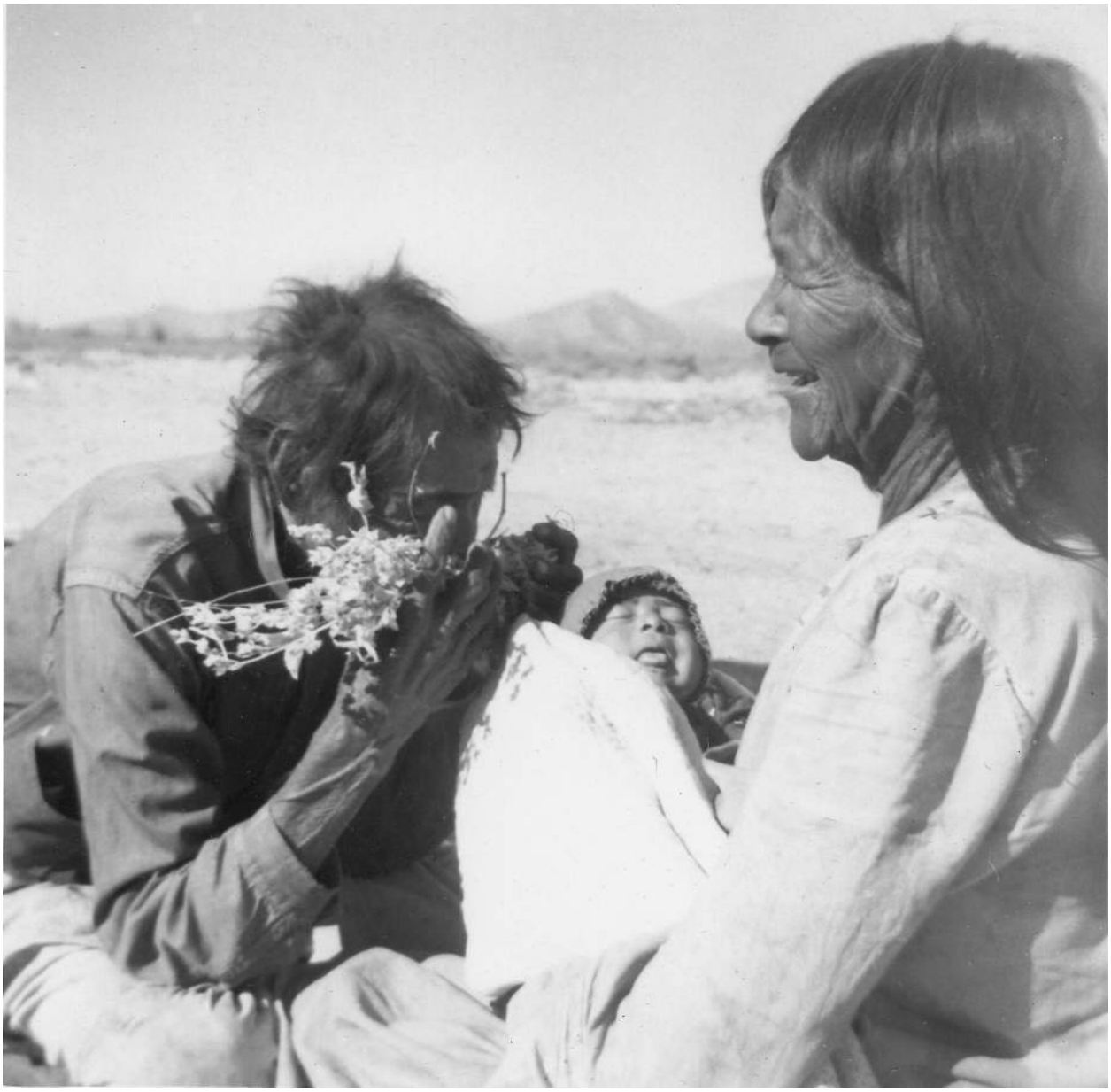

Figure 3. Porfirio Díaz chanting *zop, zop zop* through desert lavender foliage while curing a child. Photograph originally taken by Mary Beck Moser (Felger & Moser 1985:106)

This same herb, desert lavender, is commonly used today in an amulet and sold to visitors and tourists. The amulet is made with scrap cloth material, and frequently features an embroidered design on one side. The little pouch is hung from braided pieces of yarn and stuffed

with desert lavender leaves. This type of necklace is said to bring good luck to the wearer, particularly to people who are traveling.

In order to treat epileptic attacks, vulture meat *naapxa ipxasi* 'vulture its flesh' was boiled in a small amount of water and the meat and the broth was consumed by the patient (Felger & Moser 1985:110). The meat was described as having a stinky smell. For treatment of earaches, a mixture of heated fat and excrement from the vulture was placed in the ear of the patient (ibid). Another type of meat used in curing practices was that of the *xeenoj* (term for hummingbird generic), which has also been described as having a particularly strong and unpleasant odor. This meat was eaten in order to cure fainting (Felger & Moser 1985:110).

To cure a "crazy" person, the fat from the *cooyam*, an immature green sea turtle, was burned and the patient had to sit in the smoke of the burning fat. This particular type of turtle is known for the large amount of fat it has considering its small size. Similarly, if a person participating in a vision quest went crazy, the fat from the *cooyam* was cooked down to grease and rubbed over the patient's head and face to cure them (Felger & Moser 1985:113).

Finally, secretions from the snail *iquihimz iic cöihiipe* 'ringworm medicine' *Plicopurpura pansa* were used to treat ringworm and other skin disorders. One of the snail's most striking characteristics is the purple stain its secretions leave on your skin, but it has also been noted that the meat of the live animal has a strong odor (Marlett 2014:153).

Today members of the younger generation are no longer being exposed to the plants and animals responsible for the healing smells once culturally salient for their parents or grandparents. The *iquihimz iic cöihiipe* snail is no longer common in everyday Seri life, for example, and so too is lost the opportunity to experience its odors and colors. The general shift in cultural practices towards a more Westernized approach to medicine accompanied by a move

away from a semi-nomadic lifestyle means opportunities to experience the smellscapes of yesteryear disappear. This, in turn, has taken away relevant contexts in which the smell terms are used to categorize and describe these odors.

Smell of self and other

A final place odors are relevant to Seri culture is in social organization. The earliest recorded contact between the Seris and the Spanish was reported in 1536 (Bowen 1983:233). In the following centuries, there were repeated attempts at missionization of the Seris, but with very little success. This created ongoing conflict and led to killings from both the Spanish and the Seris (Marlett ms. 38), as well as eventual attempts at genocide of the Seri. This has led to continued contention and mistrust on both sides, which makes it not surprising that the distinction between these two groups would be described in terms of their odors (Classen 1992). Specifically, we see a dichotomy between the *Cocsar* or non-indigenous Mexican and a *Cmiique* or Seri person, who are believed to smell different. The (unpleasant) body odor of a *Cocsar* can be described with two different terms for unpleasant smells, one of them being the same term used to describe the desert lavender plant, *Hyptis emoryi*, the verb roots *-íxepxat* and *-cotxta*. On the other hand, the smell of a *Cmiique* or Seri person can be described with a different verb root if the smell is unpleasant (*ix -asii*). If the smell is pleasant, for instance, if a Seri person is wearing perfume or a fragrant lotion, then *ihasii -iipe* is used instead.

General discussion

Seri presents a fascinating example of a complex smell lexicon grounded in multifaceted cultural practices and beliefs. Smell seems to have played an important role in traditional Seri life not

only in terms of healing practices, but also as olfactory adornment on the body, and in living space. The specific lexical items used to refer to smell categories also apply to in-group and out-group distinctions between the *Comcaac* (Seri) and non-Seri people. In Seri, a stink is not just a stink, but a particular kind of stink, one of at least seven different types.

The data presented here suggest smell verbs in Seri are oriented towards unpleasant odors. This observation stems from: (a) the exemplars provided by speakers in the exemplar elicitation task, as well as the overlap between negative evaluative descriptions and smell verb usage in the smell identification task; and (b) the alternative strategy of using source-based descriptions for fragrant smells whose sources were flowers or fruit in the smell identification task. If this is the case, the dedicated Seri smell lexicon appears to be biased towards unpleasant odors. This could explain the fact that Seri speakers did not exhaustively use smell verbs in their responses to the smell identification task (in contrast to Jahai speakers in a comparable task (Majid & Burenhult 2014)).

When we look at the Seri data in comparison to what has been described for the Aslian languages of the Malay Peninsula (Burenhult & Majid 2011; Tufvesson 2011; Majid & Burenhult 2014; Wnuk & Majid 2014), we see the categories lexicalized in each language share some properties, such as Seri *-cozl* and Maniq *haʔĩt* used to refer to ‘smell of rotting food’; and Seri *-icotj* and Maniq *paʔɔʔ* used to refer to ‘smell of wet clothes’. We also see parallels with the social distinctions made in Kapsiki/Higi, where body odor is used to categorize different groups of people. However, the specifics of the Seri case shed new light on how this conceptual domain can be structured too.

The Seri smell data also make salient the effects changing lifestyles can have on olfactory experience, and language. Previous work on language loss has focused on the loss of biological

and environmental knowledge (see, for instance, Si 2011). We argue for a need to recognize the overarching loss of culturally salient smellscapes (as well as other perceptually relevant areas) as small-scale communities undergo urbanization and deodorization processes. Less interaction with the environment, the plants and animals that lived there, and the curing practices associated with such plants and animals, means a radical changes in olfactory experiences. Gone are the smells of fires and cooking meats outdoors; cooking is more likely to happen on gas fires indoors. The smells of vulture meat, *cooyam*, and *iquihimz iic cöihiipe* snail become less frequent. The Seri are more likely to take odorless pills should they become ill. The natural aromas of fresh lavender become replaced by the synthetic version for refreshing homes, and so the essence of lavender lingers. But the specific smells of the countless other plants and flowers are slowly lost to the younger generation.

With this change in the smellscape we see a shift in the smell language. The Seri data show even in our relatively small set of responses, older speakers were more likely to use plant names to describe the Sniffin' Sticks, and younger speakers were more likely to use Spanish loanwords. In other words, we see less use of lexical items that make reference to traditional items common in the Seri smellscape.

On the other hand, the dedicated odor terms themselves seem more robust over these encroaching changes. There was no apparent difference between older and younger speakers in their use in the odor naming task. That being said, only time will tell what is in store for the smell lexicon in Seri. Will the next generation of speakers continue to use these verb roots in their everyday speech or will they slowly fall out of use too? What about the odors found in the local environment that are salient to elders (e.g., the flowers of the evening primrose, the sand verbena, and the leaves and flowers of the desert lavender bush) that do not fall within the

referential domain of the smell verbs? Will these odors still be salient as they were for some of the speakers who participated in this task, or will they slowly be forgotten? Will future generations know that in older times when people killed a deer and skinned it, they would hit it with the aromatic plant *xoop* 'elephant tree' in order to make it taste good? Given the results presented here, without exposure to the plants, animals and other smells found in the Seri territory, acquisition of these terms seems unlikely.

Conclusions

In light of recent studies focused on smell language, the Seri data provide an additional case of a hunter-gatherer society with a dedicated olfactory lexicon. In addition, this Seri case study provides intriguing new insights into how smell lexicons might develop and evolve. Like the Jahai (Majid & Burenhult 2014) and Maniq (Wnuk & Majid 2014) of South East Asia, the Matsigenka and Yora/Yaminahua in South America (Shepard Jr. 1999), and the !xóõ of Africa (Demolin et al. ms), the Seri have an elaborate lexical field for smell qualities. It is certainly not the case that only hunter-gatherer communities have smell lexicons, as seen by the fact that olfactory lexicons exist in non-hunter-gatherer communities too (e.g., van Beek 1992, Storch 2004, de Sousa 2011, etc.), but it does begin to appear that there is something about the hunter-gatherer lifestyle which promotes attention to and talk about smells.

The smell categories lexicalized in the Seri smell lexicon reflect natural resources found in the Seri environment which are not present in the environments of other groups studied (e.g., smell of animals like sea turtle, shark, dolphin, specific plants like desert lavender, etc.). Notably, the study of this coastal community adds to further our understanding of the variety of smellscapes people are exposed to in different parts of the globe.

We have illustrated the cultural importance of smell for the Seri people, specifically as it has played a role in healing, adornment, and distinguishing social affiliations between Seris and others. However, given the recent shift in the traditional way of life to a more sedentary one, the Seri smellscape has changed. Younger Seris are not as regularly exposed to traditional plants, or animals and insects, due to the shift in everyday living patterns. Thus they are deprived of the smellscapes the older generations were familiar with, and in which this lexical field evolved. This shift leaves the Seri smell lexicon in a position of potential endangerment, a pattern we see emerging in the data presented here. The potential for language loss related to changes in ways of life provide more reason for the urgent cross-cultural documentation of smellscapes, their cultural significance, and the language used to describe them.

Acknowledgments

The research presented here has been generously funded by various sources including the following grants: NSF BCS-0553965, NWO VICI *Human olfaction at the intersection of language, culture and biology*, UNAM PAPIIT IA400113. Additionally, O'Meara's fieldwork has been partially funded in the past with assistance from the Instituto de Investigaciones Filológicas at the Universidad Nacional Autónoma de México. We extend thanks to all of the speakers of *Cmiique Iitom* who have participated in this study and generously shared their knowledge with us, including Francisca Morales Herrera, Marta Morales Herrera, Alma Imelda Morales Romero, Lorenzo Herrera Casanova, Débora Raquel Perales Morales, among others, including various members of the Hoeffer Felix family, especially Gabriel, Raquel, Teresa, Carmen, Geno, Lourdes and Carolina. This manuscript has greatly improved by comments from Ewelina Wnuk and other members of the Meaning, Culture and Cognition group at Radboud

University, as well as Steve Marlett and two anonymous reviewers.

Abbreviations

ART - article; DECL - declarative; DEF- definite; DEP - dependent; DETRANS - detransitivizer; DIST - distal; EMPH - emphatic; FOC - focal; IND - indirect; NEG - negative; NMLZ - nominalizer; OBJ - object; OBL - oblique; PASS - passive; PL - plural; POSS - possessive; REAL - realis; SBJ - subject; SG - singular; UNSPEC - unspecific.

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[i] We follow Viberg's terminology of "copulative expressions" here even though "source expressions" (Evans & Wilkins 2000) would be better suited. Since "source-based expression" in this paper is used to refer to nominal smell descriptions referring to odor sources, we hope to avoid the potential confusion by maintaining the Viberg terminology.

[ii] The capital C in this word makes reference an empty consonant in Seri.

[iii] Note, we are providing a simplified translation of the verb root *-heemt* as 'stink' since there is not an adequate one word equivalent in English to characterize the concept lexicalized.

[iv] We thank Steve Marlett for bringing to our attention that dead animals came up quickly in elicitation of exemplars with *-heemt*.

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