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In Search of Water: Hydrological Terms in Oman's Toponyms

NAFLA S. KHARUSI and AMEL SALMAN
Sultan Qaboos University, Muscat, Oman

This study investigates Arabic terms related to fresh water sources expressed in Oman's toponyms. It presents their classification and discusses the semantic and structural properties of both the place names and the hydrological lexicon. A description of oasis agriculture among the inhabitants is also given as necessary background for understanding the importance of locating water and its effect on landscape delimitation and categorization. In an environment without permanent water bodies, the significance of this resource is reflected in the way people conceptualize their landscape, minutely classifying its hydrological features and expressing them in toponyms. Historically, their knowledge of water sources has contributed to better land use management and sustainability of Oman's oasis agriculture.

KEYWORDS Arabic, ethnophysiography, landform categorization, landscape ethnoecology, landscape features, place names, traditional environmental knowledge (TEK)

Introduction

This article is intended to contribute to landscape ethnoecology which, according to Johnson and Hunn (2010), focuses on how local communities perceive and classify their landscape and the manner in which they relate to their land and its biotic resources. More specifically, it presents a description, within the context of ethnophysiography, of hydrological terms in Oman's toponyms that are related to fresh water sources.

Ethnophysiography, a growing field within cognitive geography proposed by Mark and Turk (2003a), investigates the relationship between landscape and language and compares the meanings of terms that different cultures assign to physical components such as landforms, vegetation assemblages and hydrological features (Mark and Turk, 2003b; 2004). It examines "different human conceptualizations of landscape, especially as indicated by differences in the way languages use generic terms and proper names (toponyms) for landscape features" (Turk, Mark, and Stea, 2011: 25). Though research has shown that landscape elements can be categorized in much the

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same way as other natural phenomena, they are not, however, independent objects like animals or plants but a continuous part of the earth's surface (Mark, Smith, and Tversky, 1999). This aspect of landscape lends itself to variation in the delimitation and categorization of geographic features both at the individual and group level generating a diverse ontology. A people's physical environment, their language's structure and lexicon, as well as their culture and habits, all play a role in how they conceptualize landscape and its components (Mark and Turk, 2003b; 2004; Mark et al., 2011).

Sapir (1912) was one of the earliest to suggest that toponyms — like landscape terms — provide a window into a people's perception of their environment and their attachment to it. They form a basis for identity and are "storehouses of cultural information about people's relationships with the land" (Hunn, 1996: 22). Their utilitarian function orients us in space and helps us locate resources. Ethnophysiography, then, also examines the formal and referential relationship between place names and landscape terms and seeks to discover universal tendencies that may govern landscape and place terminology.

This paper presents findings from the first phase of an ongoing research project on Oman's toponyms and Arabic landscape terms conducted by the authors. A total of 6,163 toponyms covering the country's eleven governorates have been obtained from Oman's National Survey Authority. Dhufar governorate's 1,248 names, however, are excluded from the study since the majority are in South Arabian languages and mutually-unintelligible with Arabic. In examining the hydrological lexicon expressed in place names, the study aims to show how environment, traditional knowledge and subsistence activities influence the way inhabitants perceive and categorize their landscape.

Theoretical Framework and Related Literature

In 2002 the Space Project of the Max Planck Institute for Psycholinguistics began work on place name structural and semantic properties, and later included research on landscape categorization and its expression within landscape terms. That collaborative research culminated in a special issue of *Language Sciences* presenting nine studies on typologically un-related languages spoken in diverse ecological regions with similar and different subsistence systems (Burenhult and Levinson, 2008). This was followed by a workshop held in April 2008 in Albuquerque, New Mexico, which also resulted in the publication of participants' contributions (Mark et al., 2011). Case studies on two languages — Yindjibarndi (Australia) and Navajo (USA) (Mark, Turk, and Stea, 2007; 2010; Turk, Mark and Stea, 2011) — have also been conducted.

All research to date provides evidence for variation within and across languages in the naming and categorization of place and landscape. For example, unlike English, where size may distinguish rivers, Western Pantar (Indonesia) denotes water in terms of its chemistry (Holton, 2011). Languages may also vary in terms of lexical distinctions they make, as found in Jahai (Malay Peninsula), which does not distinguish between water as a landscape feature and water as a substance (Burenhult, 2008). Cross-linguistic variation has also been seen in what motivates the lexical categorization of the environment, whether, for example it is on the basis of perceptual salience,

cultural and linguistic practices or the landscape features' utility to the speech community.

Cross-linguistic variation is also evident in the structural and semantic properties of place names whose morphological complexity, for example, ranges from the prevalence of mono-morphemic names in Jahai (Burenhult, 2008) to morphologically complex terms in Lowland Chontal (Mexico) (O'Connor and Kroefges, 2008). Likewise, variation is noted within and between languages in the semantic analyzability of names and lexical-source domains from which toponyms are generated, with terms being drawn from numerous domains including landscape features, body parts, proper names, animals and plants.

Published research on Arabic landscape terminology or toponyms includes Groom's dictionary (1983) and *Mausūᶜat ᵓArḍ Oman* (2005), the latter is an encyclopedia, based on Classical Arabic references, of towns, villages, and Oman's historical sites, as well as its geographical features such as bays, islands and valleys. The principal sources for the data in Groom's work are dictionaries. He lists widely occurring landscape terms found in the toponymy of Arabic-speaking countries.

Definitions of toponymic data in this paper are based on Groom's dictionary and *al-Maktaba al-Shāmila*, an electronic databank of over 5,000 Arabic books and bilingual dictionaries. Wilson and Moore's glossary (1998) is consulted for English equivalents.

The Falaj and Oasis Agriculture

Oman lies on the southeastern coast of the Arabian Peninsula, bordered by Saudi Arabia and the United Arab Emirates (UAE) to the west and Yemen to the south. Its topography is characterized by mountains, coastal and desert plains and ephemeral stream beds called *wadis* (Figure 1). The deeply incised networks of wadis in the mountains serve as critical watersheds for the surrounding regions and a source of economic sustenance to the population.

Oman has an arid to hyper-arid environment with no permanent water bodies. The only source of natural fresh water is rainfall, which recharges groundwater aquifers in the mountains. There are also hundreds of springs, the majority in the mountainous areas of Batina, Dakhiliyya and Dhufar (Al-Ismaily and Probert, 1998) (Figure 2).

Before the extraction and commercial use of crude oil, the country's economy depended on oasis agriculture, fishing, and trade across the Arabian Sea and the Empty Quarter. Sustainable agricultural settlements naturally developed around the mountain ranges, in areas where water could easily be accessed (Luedeling and Buerkert, 2008a). Oman's scarcity of water and its concentrations in only specific hydrological settings, led farmers to develop a reliable and effective system for its catchment, storage and distribution. For centuries, this system of managing water resources, called *falaj* (Arabic, pl. *aflāj*), became a critical component of the country's oasis agriculture (Wilkinson, 1983). A basin-based canal system, it harnesses water by tapping perennial natural springs or channeling surface or sub-surface flows in wadis. The water is then conducted over long distances through man-made irrigation channels (the *falaj*) to irrigate crops, some of which are planted on mountain terraces. There are three types of *falaj* systems in Oman, one of which is the *Ghailī* /ɣa͡ɪli/, which draws water from flows captured in the gravel surface depressions of wadis

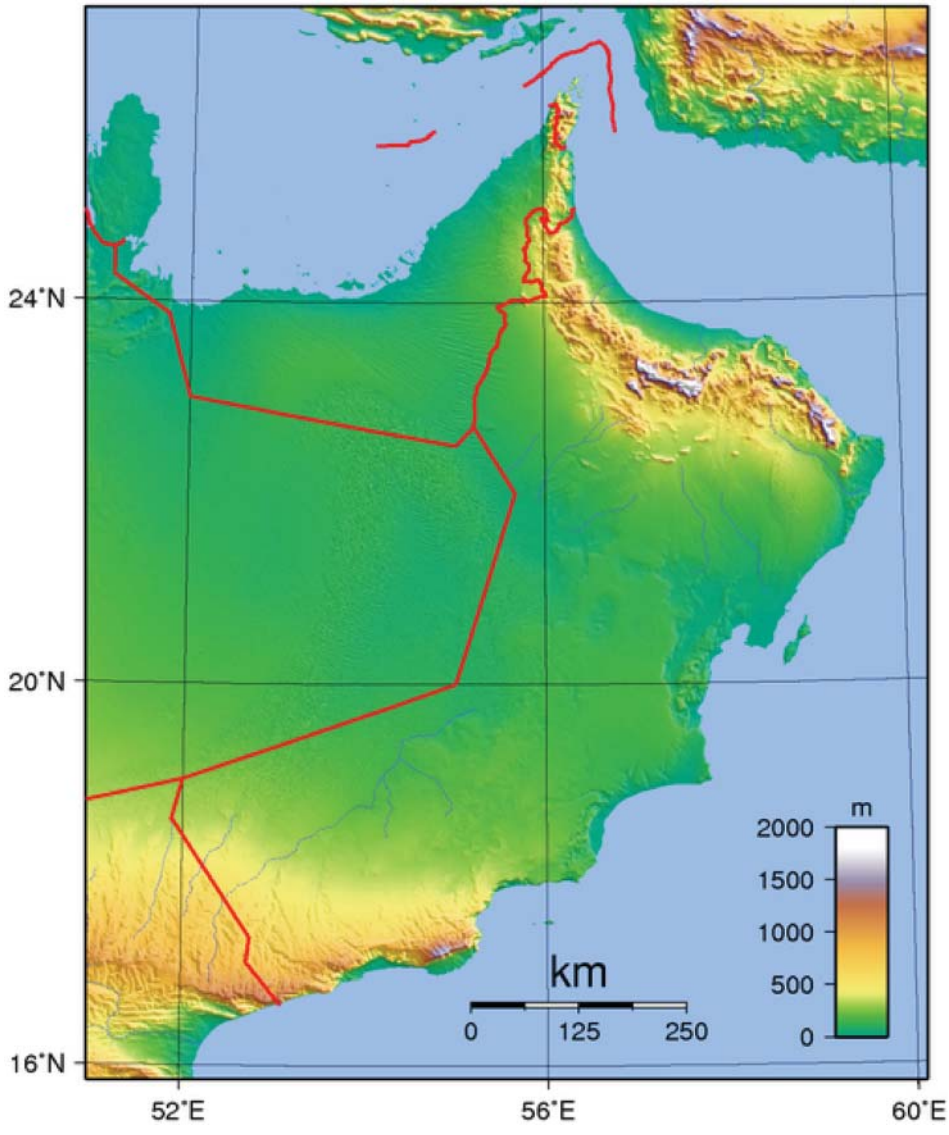


FIGURE 1 Topographic map of Oman.[1]

and conducts it in purpose-built channels or simply diverts it. The *ʿAinī* /ʕaɪ͡ni/ system conducts water drawn directly from springs, while the *Dāwūdī*, noted for having the most stable water flow throughout the year, draws water from a mother well dug to intercept an underground aquifer and conveys it to villages through an underground channel which may reach a length of 17 kilometers (Al-Rawas and Hago, 2000; Wilkinson, 1977). The importance of a particular *falaj* depends on the quality of its water. It is estimated that there are over 4,000 *aflāj* in Oman, mostly concentrated in the mountainous regions of Batina, Dhahira, Dakhiliyya and Sharqiyya.

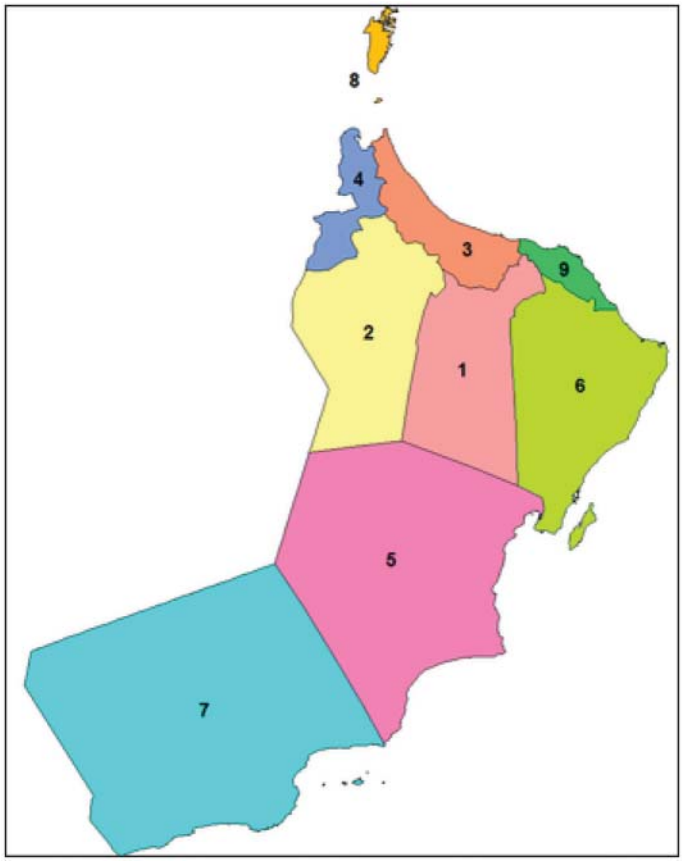


FIGURE 2 Oman's governorates.[2] 1 Dakhiliyya; 2 Dhahira; 3 Batina (North and South); 4 Buraimi; 5 Wusta; 6 Sharqiyya (North and South); 7 Dhufar; 8 Musandam; 9 Muscat

Typically, water conducted by a *falaj* is not supplied to an individual but to a local community, and over generations a complex system has evolved of shared responsibility over *falaj* maintenance and water allocation (Wilkinson, 1983). The cleanest water is reserved for drinking at a communal collection point where water first surfaces — the *sharīʿa* /ʃariʕa/. Then it flows downstream, where washing and ritual ablutions take place, and finally it is conducted through smaller channels that branch from primary ones to flow into individual plots. While the *falaj* system is important for a community's economy, it is equally so for its social structure, in which "water rights are treated similarly to real property rights that are inherited, sold, and rented in the same manner independently of the land on which water is used" (Zekri and Al-Marshudi, 2008: 35). Besides the *falaj*, another traditional source of potable water in Oman is found in approximately 160,000 wells scattered across the country. In contrast to mountain oases, where *aflāj* supply mainly irrigation water, coastal areas such as Batina rely primarily on groundwater from wells (Al-Ismaily and Probert, 1998).

Research has shown that a factor that contributed to the sustainability of oasis agriculture in Oman's past was the harnessing of water only from topographical

or geological locations where water was readily available (Gebauer et al., 2007; Luedeling and Buerkert, 2008a). Traditionally, also, the irrigation system operated on gravitational flow, though in some areas animal traction was used to lift the water. And since perennial and annual crops had different water demand patterns, farmers maintained a balanced combination for the efficient use of water resources throughout the year.

Toponyms

The semantics of Oman's toponyms appears to be related to those landscape features which people perceive to be important for their lifestyle and subsistence activities. Thus, in addition to data referring to hydrology (water in the landscape), the next two large proportions denote topography (landforms) such as *al-daqdāqa* "small hump-shaped sand-dune" and land cover (vegetation) such as *al-sidra* "Lote tree" which grows in arid environments. At forty percent, toponyms carrying hydrological terms specifically associated with potable water constitute the largest proportion of the data and the primary focus of this study. Of these, eighty percent are found in four of the country's eleven governorates — Batina, Dakhiliyya, Sharqiyya and Dhahira — regions traditionally representing the heartland of oasis agriculture and settlements. In fact, three of them — Batina, Sharqiyya and Dakhiliyya — have the largest number of toponyms among the country's governorates. Up until 1970, these three were the most populated and indeed Hunn's research (1994) demonstrates a positive correlation between population density and toponymic density.

Place names are typically represented by both uninomials and compound nominals or construct phrases. Frequently occurring headwords include *wadi* mainly an "opening between mountains where floodwater passes" though it could also refer to the water that flows in or from such a location; also *ʿain* "a spring," *ghail* "ephemeral running water" and *ḥail* /hāɪl/ "water which remains in a valley and stagnates." The headwords are followed by nominal lexemes from different semantic fields such as the following:

Vegetation: Ḥail al-Ghāf, *al-ghāf* "Prosopis," a type of tree which is abundant in Oman.
Hydrological terms: Wadi al-Sail, *al-sail* "flashflood in a valley."
Geomorphic features: Wadi Ṣalāba, *ṣalāba* /sˠala:ba/ "hardness; solidity; hard ground."
Animals: Wadi al-Ḥaḍība, *al-ḥaḍība* /ʔalħadˠiba/ "snakes; male snakes."
Man-made structures: Wadi al-Misyid, *al-misyid* : dialectal form of *masjid* "mosque."

Names of people: In general, toponyms are semantically transparent and consist of generic terms rather than hydronyms. A few exceptions are formed typically by linking an existing hydrological feature to the name of a local tribe or family. One example is Ḥail al-Manādhira, which started out as a hydronym then evolved into a town toponym.

Compound nominals can also be formed by combining the hydrological term and its attribute:

Water force / speed: Wadi al-Qaḥfī, *al-qaḥfī* /ʔalqaħfi/ "very fast flowing water."
Water quantity: ʿAin Wushaila, *wushaila* : diminutive form of *washla* "dripping water."

Water taste: ᶜAin al-Ḥulwa, *al-ḥulwa* "sweet."
Water temperature: Wadi al-Buwairid, *al-buwairid* : diminutive form of *bārid* "cold."
Size: Ghail ᶜAud, *ᶜaud* : dialectal "big."
Depth of the flood bed: Wadi al-Ghawār, *al-ghawār* "bottom or lowest part."

Arabic morphology has contributed to fine gradations in the classification of water features and the many derivations of a basic form occurring in toponyms. For example, the generic term *saiḥ* refers to water that runs above the surface of the ground and co-exists with *musayyaḥ* and *sayyāḥ*. *Musayyaḥ* denotes "water that is let to run along the surface of the ground," while *sayyāḥ* refers to "a shallow depression or a valley with no water channel." The pattern of *sayyāḥ* also denotes intensity or emphasis, and its adjectival form *sayyāḥī*, also used as a toponym, denotes a place that has the attribute of *sayyāḥ*.

Hydrological Terms

The toponymic data includes terms that may appear in their singular, dual and plural forms. Similarly, a large number occur with their diminutives as well, an observation also made by Groom (1983). Only one instance of the term, however, is counted, while repetitions, different derivational or inflectional forms are not, unless they are semantically relevant. The result is 99 uninomial terms denoting hydrological features.

On examining the categorization of water-related units in Oman's toponyms, it appears that utilitarian significance is what motivates the process. For oasis agriculture, the reliance on perennial springs and the channeling of surface and sub-surface flows in wadis is reflected in the plethora of associated terms found in place names. The scarcity of water and the need to identify its sources have contributed to the specificity accorded to hydrological features and to their related sub-categories, resulting in a fine-grained taxonomic system. In the same vein, noting the precise distinctions made to topographical features reflected in Southern Paiute toponymy, Sapir asserts that "accurate reference to topography [is] a necessary thing to dwellers in an inhospitable semi-arid region; so purely practical a need as definitely locating a spring might well require reference to several features of topographic detail" (1912: 228).

Within the toponymic data there are general hydrological terms that denote both surface and subsurface water sources and which distinguish water on the basis of its *quality* or *volume*. Clean water is designated by *al-ṭāhir* "very clean"; *al-naqiyya* "pure; clean pure water"; *al-ṭayyib* "sweet; very clean"; *nimir* "wholesome, palatable; copious"; and *al-gharīḍ* /ʔalɣaridˠ/ "fresh water." Though some terms may appear synonymous, there are often differences in their senses. For example, *al-ṭāhir* /ʔal tˠa:hɪr/ and *al-ṭayyib* are terms derived from adjectives used to describe humans and objects and both denote very clean water; however, *ṭāhir* has a religious connotation of being "pure," the opposite of *najis* "impure." Water denoted as *ṭāhir* is fit for ritual washing, even if it is mixed with other substances, while the term *ṭayyib* carries the extra senses of being good and sweet, with an implied sense of "pure." Thus water denoted *ṭāhir* may not necessarily be fit to drink yet still be considered "pure." Other examples are *ṭayyib* and *nimir*, both of which refer to water suitable for drinking; but the former denotes specifically sweet water, while *nimir* is wholesome water

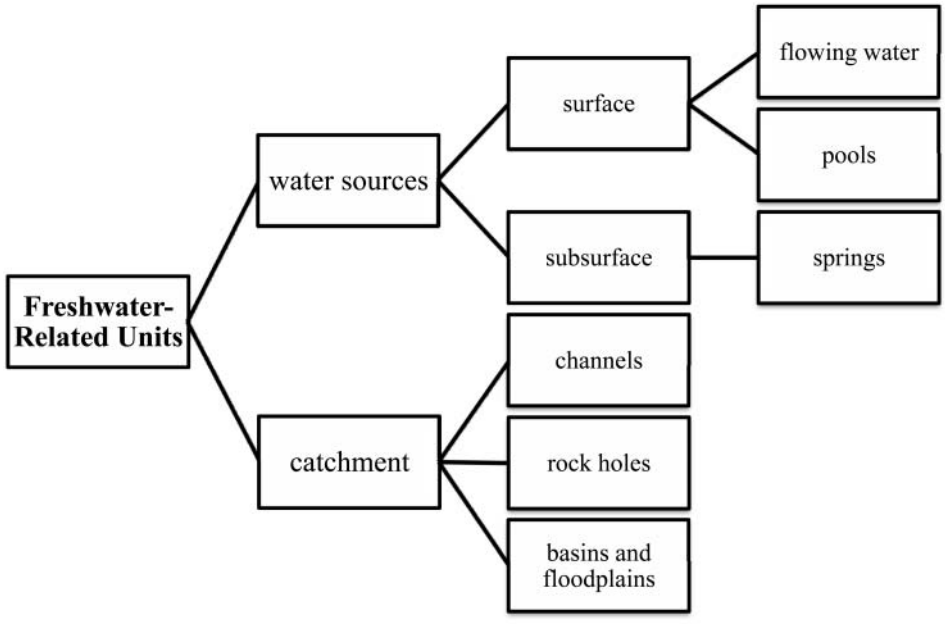
which may not be sweet. *Ruwī*, a variation of rawī, also denotes "sweet water." *Nimir*, the colloquial form of *namir*, also carries the sense of being copious. On the other hand, the ascription of *naqiyya* is based on the cleanliness and clarity of the water and *al-gharīḍ* denotes fresh water "obtained from early morning," thus alluding to its status as "fresh water." Unclean water is denoted by the term *al-kudair* "turbid, thick muddy," a diminutive of *kadir*. The diminutive status may not refer to the water's quantity but to its degree of muddiness.

General terms designating high *volume* are represented by *al-ʿamqa* "deep"; *ʿaurāb* /ʕa͡ʊra:b/ "abundant, clear water"; *ghamr* "deep or copious water"; *ḥaiḍ* /ʜa͡ɪdɣ/ "overflowing water"; *zībāt* a plural form of *zīb* "abundant water"; *ḥafil* "accumulated water." The terms differ semantically in terms of features of depth, copiousness or clarity, with *ghamr*, for example, having the sense of sufficiently deep and copious to drown in. The term *al-jabājib*, which also denotes abundant water, is not used in everyday language. Low volume terms are *barḍ* and *al-muwaibīn* /ʔalmʊɰa͡ɪbin/ "little water," while *al-muwaibīn* is a colloquial diminutive of either *mūbiʾ* /mubɪʔ/ "water little in quantity or failing in supply" or *maubiʾa* /ma͡ʊbɪʔa/ "a wide and deep well," which may also imply "failing in supply," thus deeply dug in search of water. *al-Muwaibīn* is then semantically broadened to refer to any water source whose supply is failing.

Water Sources

Chart 1 represents a classification of freshwater-related units for which terms appear in the toponymic data. Water sources are categorized as surface and subsurface, with the former subcategorized as *flowing water* and *pools*, and subsurface as *springs*.

CHART 1
CLASSIFICATION OF HYDROLOGICAL TERMS



Surface: Flowing Water

Among terms under this subcategory is the frequently occurring toponymic word *wadi* "a valley or land between mountains or hills," but it also refers to the water flowing from such a location as well as the streambed in which it flows. Other terms are *al-saiḥ* /ʔalsa͡ɪʜ/ "flowing water" and *al-ghail* "ephemeral running water," the former carrying the sense of "spreading," while *al-ghail* refers specifically to water that runs in flood-beds, channels or among stones. In contrast, *al-ghalīl* designates water "flowing among trees; a light covering on the ground which comes and goes," and *al-rijla* "flowing from a stony tract to soft ground," while *al-musayyaḥ* "water let to run along the surface of the ground" implies human agency. The feature "manner" distinguishes *saiʿ* /sa͡ɪʕ/ as "running on the ground in an irregular and disorderly way," while *al-raqaba* refers to a "backwater or tributary" and "unclean" is designated by *maghsar* "a rill polluted by wind-blown debris."

Flowing water is also distinguished by its *speed* or flow *force*. *Faiḍ* and *al-fayyāḍ* both denote "flood," but the latter has greater intensity. *ʿIzz* and *al-ṭaḥāyim* /ʔalt^{ɣ}aʜa:jɪm/ refer to "an over-powering torrent," but the force in *ʿizz* could be attributed to the amount of rain, while *ṭaḥāyim* — the plural of *ṭaḥma* "main part of a torrent" — implies force derived from water volume rather than rain. One also finds *al-dafʿ* "surge of a flash flood"; *yitī*, a dialectal form of *ʾitī* /ʔɪti/, which has a direction feature that is "a torrent coming from another region" and the more general *al-sail* "flashflood in a valley." Speed distinguishes *al-kharr* /ʔalxarr/ "fast flowing" from *al-qaḥfī* "very fast flowing" and *al-dāsir* "propellant; fast." These terms are contrasted with *zuwaid*, the diminutive of *zaud* "small flood"; *ḥabḥaba* "slow running water"; *shanna* "intermittent flow or dripping" and *al-washal* "dripping from a rock or mountain."

Surface: Pools

There are terms associated with naturally formed pools which vary in semantic focus. *Ghirāb*, plural form of *gharb*, denotes an overflowing pool with water spilling over its sides; *ḥaqlāʾ* /ʜaqla:ʔ/ "remaining clear water in a pool" focuses on clarity, since normally water that remains at the bottom of a streambed has deposits; *ghadīr* "pool of water left by a flood" is distinguished from *ḥail* which is water (rather than a pool) that remains in a valley and stagnates, thus implying that it has remained due to a lack of force to make it flow, and *thumaid*, diminutive of *thamad* "a remnant on hard ground that has no continuous supply to replenish it."

Subsurface: Springs

This category is represented by terms denoting perennial springs, which are further differentiated by water *quality*, *temperature* and *volume*. With respect to quality, *al-ʿudhaiba* /ʔalʕʊða͡ɪba/, a diminutive of *al-ʿadhba* /ʔalʕaðba/ "sweet water-spring" is contrasted with non-sweet: *al-ʿuqqa* "bitter" and *al-malḥa* "salty." Temperature, on the other hand, is designated by *al-bārida* "cold spring," which is contrasted with four terms denoting hot springs varying in heat: *ghalā* "very hot; boiling"; *al-ḥamma* "very hot"; *al-sukhn* "hot" and *al-ḥārra* "hot," which may also carry the sense of hot as in spicy.

Abundant springs are designated by several terms that differ in degree and which sometimes can also designate wells: *ḥaiḍ* "overflowing"; *gharāra* "full, overflowing"; *zakt* "full and produces lots of water"; *rayy* "spring with much water." A term which focuses more on the water in a spring or well is *ʿidda* "water that comes in a continuous supply and does not reduce in amount." Unlike other hydrological words in the toponymic data, these terms appear without the definite article "*al-*." To convey uniqueness however, some Arabic names can occur with a definite article, and thus its absence in this case of abundant wells may serve to ward off the "evil eye" from the place or may simply suggest that the well is expected to eventually dry up. An exception to this is *al-badʿa* "a large or abundant well" occurring with a definite article and *al-nabʿa*, which also occurs in the data in the feminine form when the original is masculine. These terms designating abundance are contrasted with *al-qaṭṭāra* /ʔalqatˠtˠa:ra/ "spring (or well) providing only a trickle of water"; *al-shaʿar* /ʔalʃaʕar/ a plural of *shaʿra* /ʃaʕra/ "spring providing only a trickle of water" and *al-ʿuwaina* "small spring." Finally, a term related to a subsurface water source is *sulayya*, from *salla* "fissures in the ground through which water drains away."

Catchment

Natural depressions that hold water, and catchment areas, are categorized as *channels*, *rock holes* and *basins and floodplains*.

Channels

Besides *wadi*, another general word for channel is *al-sīb*. Examples of terms distinguished by a channel's *location* and/or *direction* are *al-rajʿ* /ʔalradʒʕ/ "where water collects before flowing"; *karb* "where water flows from mountain top to lower parts" and *maslaq* "between two tracts of elevated or rugged ground." Channels may also differ in *width* and/or *material make-up*: *al-baṭḥāʾ* /ʔalbatˠʜa:ʔ/ "wide with small pebbles and silt" and *al-jaww* "wide or with a sandy bottom." These contrast with narrow or shallow channels: *al-maḍīq* "narrow"; *al-shuʿaib* diminutive of *shaʿb* "narrow, especially in mountains, with higher edges"; *sal* "narrow flood channel (or a low place where water collects)"; *muraiwa*, diminutive of *marwā* "small channel"; *al-sayyāḥ* "shallow depression (or valley with no water channel)"; *al-buwaiṭin*, diminutive of *bāṭin* "a small depression or very shallow valley"; *al-shaghi* "narrow gulley."

Partonomic relations are expressed in terms designating different sections of a wadi: *al-ʿawāqi* "deep part"; *al-fajra* "wide part where water gushes"; *al-ḥalq* "narrow section"; *al-ḥawiyya* "winding intestine-like hole in the bottom of a wadi that has water left after a torrent and remains there due to compacted mud"; *al-makhraj* "wide wadi mouth"; *al-manābik* "section where trees grow high"; *al-mirkāḍ* "where most of the water is"; *al-mithjār* "where water disperses and spreads over land area, or the middle and wider sections"; *al-raḥba* "a not sandy depression in the middle or end of a wadi bed where water stagnates; or a watercourse leading into a wadi from the sides." Partonomic relations also exist in terms associated with valleys and water: *al-mijnāb* "slope shutting in a valley through which a creek runs"; *al-misfā* /ʔalmɪsfa:/ from *musfah* /mʊsfah/ "heavily flooded valley"; *al-salīl* "middle of valley where most of the water flows"; *al-khabt* "gravel or sand basin at the bottom of a wide or deep

valley where water collects"; *mudaifiʿ*, diminutive of *madfaʿ* "lower part of a valley where flood-water disperses"; and *al-khalaf* "section after *al-madfaʿ*."

Rock holes

Holes that hold water are distinguished by *depth*, *size* and/or *location*: *al-waqba* "deep hole in a rock or in a hard, stony tract"; *thuqub* "shallow hole"; *lūbān*, dialectal plural of *al-waʿb* "small hole"; *natiyya* "small hole or cavity among stones"; *al-fuqū* /ʔalfʊqu/, dialectal form of *al-faqʿ* /ʔalfaqʔ/ or *al-faqī* /ʔalfaqi/ "small hole in rock or mountain side"; *al-qulait*, diminutive of *qalt* "hole in rock or ravine; hole in a cavern formed by water dripping from the roof."

Basins and Floodplains

Finally, there are also terms denoting basins and floodplains. These are differentiated by *material make-up*, *location* and/or *direction*: *al-rauḍa* /ʔalra͡ʊdˠa/ "sand area where water collects"; *qarī* "where water runs into a meadow"; *al-sharja* "where water flows from rugged terrain into a plain or wadi"; *al-ḥair* "where water flows into or from a watercourse"; the name is derived from *ḥāra* or *taḥayyara* "to whirl."

Conclusion

Since the 1970s Oman's infrastructural and demographic changes have had an impact on all aspects of the country's life, but in particular on traditional land use patterns. The shift from subsistence to market-oriented food production and the emphasis on perennial crops at the expense of annuals coupled with a rapid development of urban centers, have all contributed to the demand for water outpacing its supply, thus jeopardizing the hydrological sustainability of oasis agriculture (Luedeling and Buerkert, 2008b). Over the past few decades, for example, many farms have been abandoned due to their inability to support crops because of increased water salinity caused by over-extraction of groundwater (Victor and Al-Farsi, 2001).

Studies have shown that people's classification of their landscape enables them to predict and locate resources, which in turn helps to maintain livelihoods (Davidson-Hunt and Berkes, 2010; Roba and Oba, 2009; Trusler and Johnson, 2008). Traditional knowledge has contributed to better land use management and sustainability of oasis agriculture, a knowledge reflected in the abundant hydrological terms found in Oman's toponyms. Campos et al. (2012) and Riu-Bosoms et al. (2014) stress how the understanding of people's landscape classification systems can yield more responsible land and resources management. Through participatory processes as well, traditional knowledge could be used by urban planners and government agencies to better serve local and institutional stakeholders (Palmer, 2004; Valencia-Sandoval, Flanders, and Kozak, 2010; Velázquez et al. 2009).

It is hoped that these preliminary results of an ongoing project on Oman's toponyms will add to the growing body of literature on ethnophysiography and provide a basis for further investigation into the classification of landforms and vegetation assemblages expressed in place names. Future studies will involve field interviews and photographs to clarify and confirm landscape categorization and identify any existing dialectal differences in landscape terminology which may contribute towards semantic change.

Against a background of a rapidly developing country, an examination of toponymic knowledge among its inhabitants will also be made to investigate possible toponymic attrition and its implications for indigenous knowledge.

Notes

[1] *Wikipedia*, "Oman." Accessed June 2, 2014. http://en.wikipedia.org/wiki/File:Oman_Topography.png.

[2] *Wikipedia*, "Oman." Accessed June 2, 2014. http://en.wikipedia.org/wiki/Governorates_of_Oman.

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Notes on contributors

Nafla S. Kharusi received her doctorate in linguistics from Georgetown University in Washington, D.C. She is currently working on Oman's toponyms, investigating the extent to which language and culture influence the categorization of landscape features. Her other research interests include ethnic politics and ethnolinguistic minorities of Oman.

Correspondence to: Nafla S. Kharusi, Sultan Qaboos University, College of Arts and Social Sciences, Department of English, P.O. Box 42, PC 123-al Khaud, Muscat, Oman. Email: nafla@squ.edu.om

Amel Salman teaches linguistics and translation in the Department of English at Sultan Qaboos University, Oman. She holds a doctorate in lexicology and lexicography from the University of Glasgow, United Kingdom. Her research interests include language and culture, ethnolinguistics and ethnophysiography.