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Substance and Symbol: The Ethics of Water Use and Development
in Oman.

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This thesis is submitted in partial fulfillment of the requirements for the departmental honors program.

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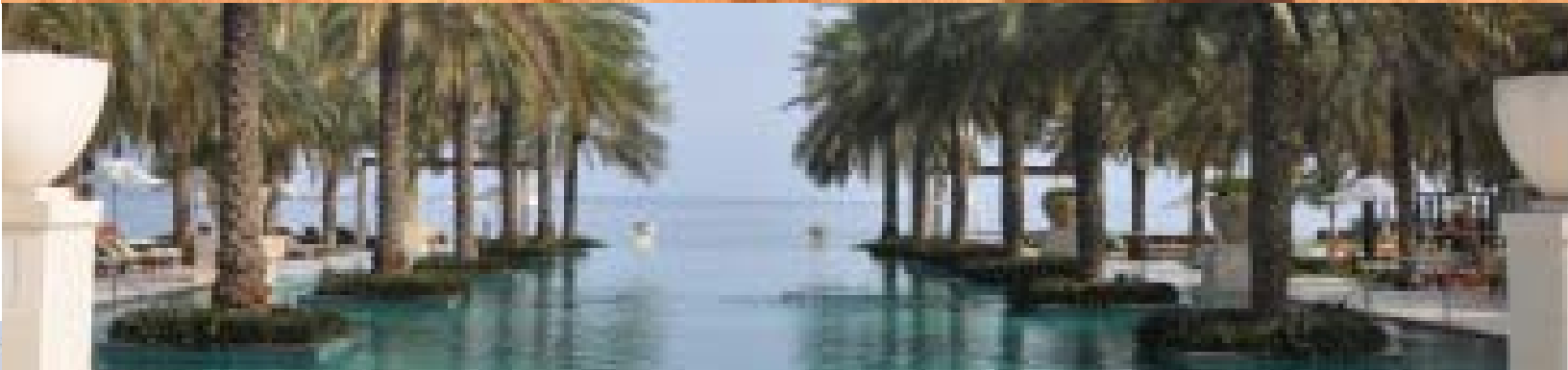
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Substance and Symbol The Ethics of Water Use and Development in Oman



By Sarah Boone



Substance and Symbol

The Ethics of Water Use and Development in Oman

A Jackson School Honors Thesis

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Advised by Dr. Sara R. Curran

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Dedication

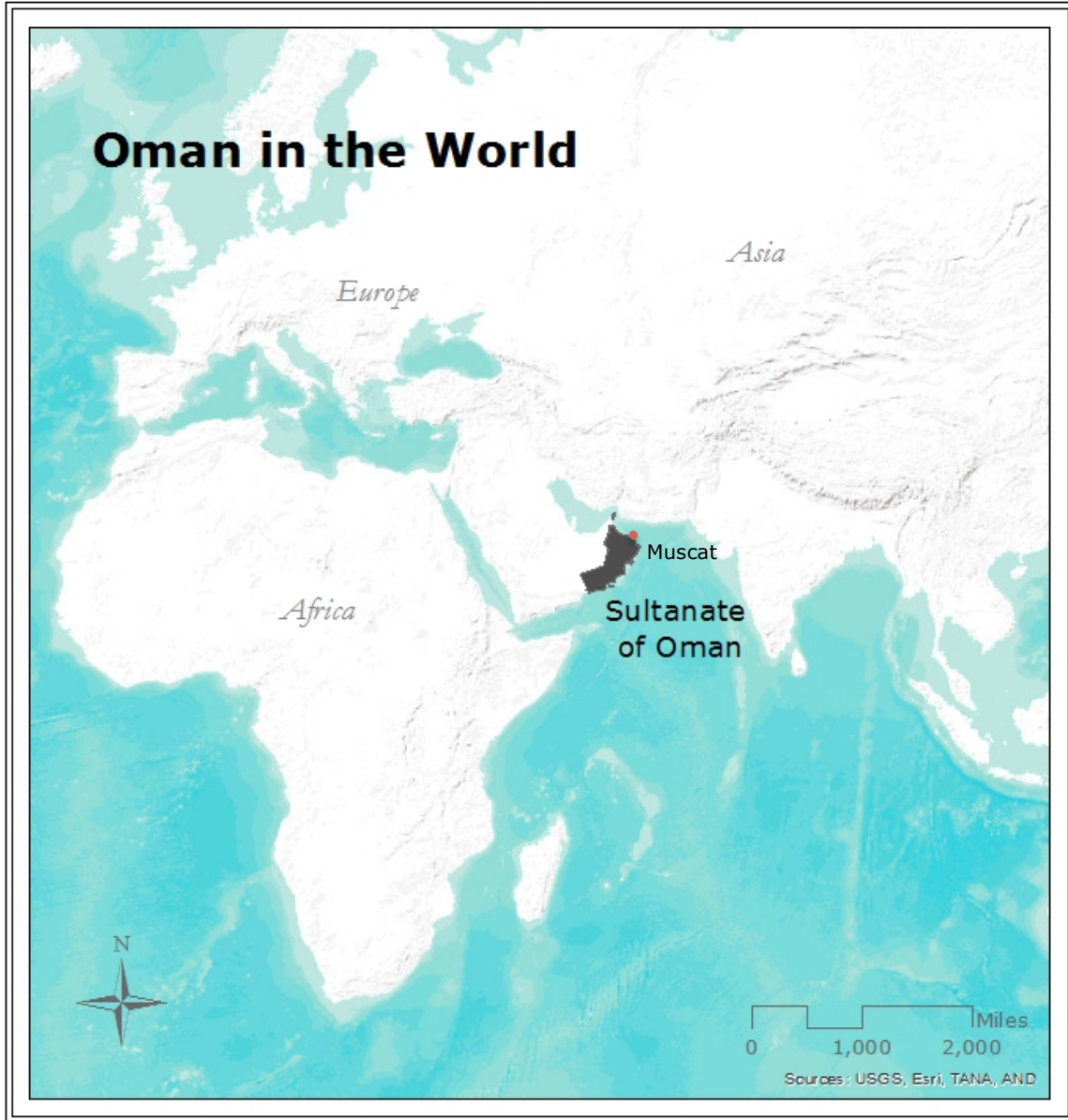
*For the Omani people, whose culture of generosity and self-responsibility
I hope will never fade...*

*...and for His Majesty Sultan Qaboos bin Said, Sultan of Oman,
whose individual wisdom brings honor to an entire nation.*

“Of all the gifts with which God has blessed us, water is the greatest. It must be cherished and husbanded. Every effort must continue to be made to develop this resource. If extravagance is forbidden by Islam, it is even more applicable to water. Indeed, Islam emphasizes it in its teachings that it is our duty to conserve it. We cannot stress too strongly the need to observe the conservation measures laid down by the Government in this respect. The use of this vital resource throughout the world can have a great impact on future development strategies, and indeed could become a decisive factor in political tension and thus world security.”

From the speech of His Majesty Sultan Qaboos Bin Said, Sultan of Oman

On the 21st Anniversary of Oman’s National Day, November 18th 1991



Map 1: Oman in the World

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Glossary of Arabic Words

Aflaj – See “*falaj*.”

Ain (aini) – A natural spring.

Allah – The name of God in Islam.

Daudi – A subterranean *falaj* that carries groundwater to a town.

Falaj (pl. aflaj) – A traditional aqueduct that bring water to most rural villages. Falaj water is considered community property and is regulated by traditional Islamic law.

Ghaili – A *falaj* that diverts water from a mountain stream.

Hadith – A saying of the Prophet Muhammad

Haram – Morally reprehensible, sinful, illegal, forbidden.

Hima – A set of moral precepts and responsibilities for water governance.

Qur’an – The holy book of Islam. Rules for governing water are included in the revelations given to the Prophet Mohammad by Allah.

Shari’a – Islamic law. The archaic definition of “*shari’a*” was “water law.”

Sura – A chapter or section of the *Qur’an*.

Wadi - A stream bed that flows from valleys in the mountains. Most *wadis* only channel water intermittently after it rains, though some have water flow year round, creating oases.

Wakil (or Arif) – The designated water manager in a small town, responsible for overseeing water distribution and coordinating maintenance efforts.

Part I: Introduction

Paradoxical Water Ethics in Oman

Over the past 40 years, the Sultanate of Oman has undergone a social, cultural and economic “Renaissance” which has dramatically changed the lifestyle of many Omanis. With a history of scarcity in the Arabian Peninsula, water has played an important role in Gulf society, influencing everything from the region’s economic prospects to the daily rituals of its peoples. Not surprisingly, communities living in this part of the world have traditionally conserved this precious resource, developing intricate systems of water storage, distribution and use.¹ However, within the span of only two generations, water use has changed considerably, as desalination and increased pumping of fossil groundwater reservoirs have allowed for much greater levels of consumption.²

At present, water consumption by the population is greater than the amount of water supplied by renewable resources, resulting in an annual water deficit of roughly 378 million cubic meters per year.³ This deficit exceeds the annual groundwater recharge rate by 25 percent.⁴ Given these figures the situation at present is unsustainable, and if this water deficit is not resolved it could become a serious ecological, social and economic problem. Many Omanis are aware of this looming issue as the government and news media have given increased attention to this problem in the past few years.⁵ However, Omani citizen’s responses to this call for conservation have varied dramatically. Drawing on a culture of conservation, Omanis maintain many ideas and ethical beliefs which require individuals to take great care not to waste water. At the same time, most Omanis in urban areas view new, water-intensive lifestyles very positively.

¹ Ministry of Regional Municipalities, Environment and Water Resources, *Aflaj Inventory Project Summary Report*

² Ministry of Regional Municipalities, Environment and Water Resources, *Water Resources in Oman*, 1st ed. (Muscat, Oman: Mazoon Printing Press, 2005).

³ Ibid.

⁴ Ibid.

⁵ Paul McLoughlin, "Water Sources," *Y: Pulse of the New Generation*, June 28, 2011, 2011, 22.

The Puzzling Ethics of Water Use

This thesis analyzes the seemingly conflicting symbolic and substantive patterns of water use in Oman, exploring the ethical constructs that are used to strictly conserve water in some social settings while legitimating increased consumption in others.



Figure 1: Two Contrasting Views From Sultan Qaboos Highway

At a glance, it seems unlikely that the two images in **Error! Reference source not found.** are from the same place. Yet, these two photos were taken within 10 miles of each other on Sultan Qaboos Highway, the first being taken a few minutes outside of the coastal capital, and the latter being taken from within the city limits. The extremely arid natural landscape is a harsh contrast to the lush environs found in Muscat, the capital city. The greenery in the second picture is not a product of nature but rather of man. Parts of the capital city have been transformed into an opulent oasis, providing just one example of the water intensive lifestyle now enjoyed by urban Omanis. Such a high level of water consumption is typically not acceptable in rural or traditional communities.⁶ Given that Omanis today applaud the urban greening or “beautification” projects and lifestyles of

⁶ Interview 1.

Muscat, something must have changed in their concept of acceptable water use in the past 40 years.

This study explores the change in Omani water ethics by analyzing the perspectives and experiences of everyday citizens, documented through semi-structured interviews. Across the board, participants in this study said they were more likely to conserve water in the countryside rather than in the city. At first, it would be easy to assume that the reason for this is that it is more difficult or more expensive to get water in the countryside. But what if this assumption is false?

As it turns out, the infrastructure projects that have lifted Oman dramatically on international developmental indices have also included water pipes and road networks that connect most villages in Northern Oman with the urban coast.⁷ Pipelines and tanker trucks carry desalinated water from the coastal plants to supplement the natural water used in the countryside. Water from these sources is now easily available in the countryside for a comparable price,⁸ thanks to government subsidies, and as several interviewees noted, cost was not the primary factor limiting water use in the countryside.⁹ If it is true that access to inexpensive water sources is fairly equal between urban and rural areas, we might expect to see a similar increase in people's willingness to consume in the country and in the city.

However, as small towns receive this new source of water at a similar rate, per capita water use in the countryside has not increased to the same extent as water use has in the city. In the following chart, we can see clearly that the water use per capita in Muscat has increased much more dramatically than water use in rural areas. Omanis living in the

⁷ Public Authority for Electricity and Water, *Annual Statistical Report on Water 2008* (Muscat, Oman: , 2008).

⁸ Ibid.

⁹ Interviews 1, 7, 16.

countryside must then choose not to consume as much water based on additional factors other than price and rational choice.

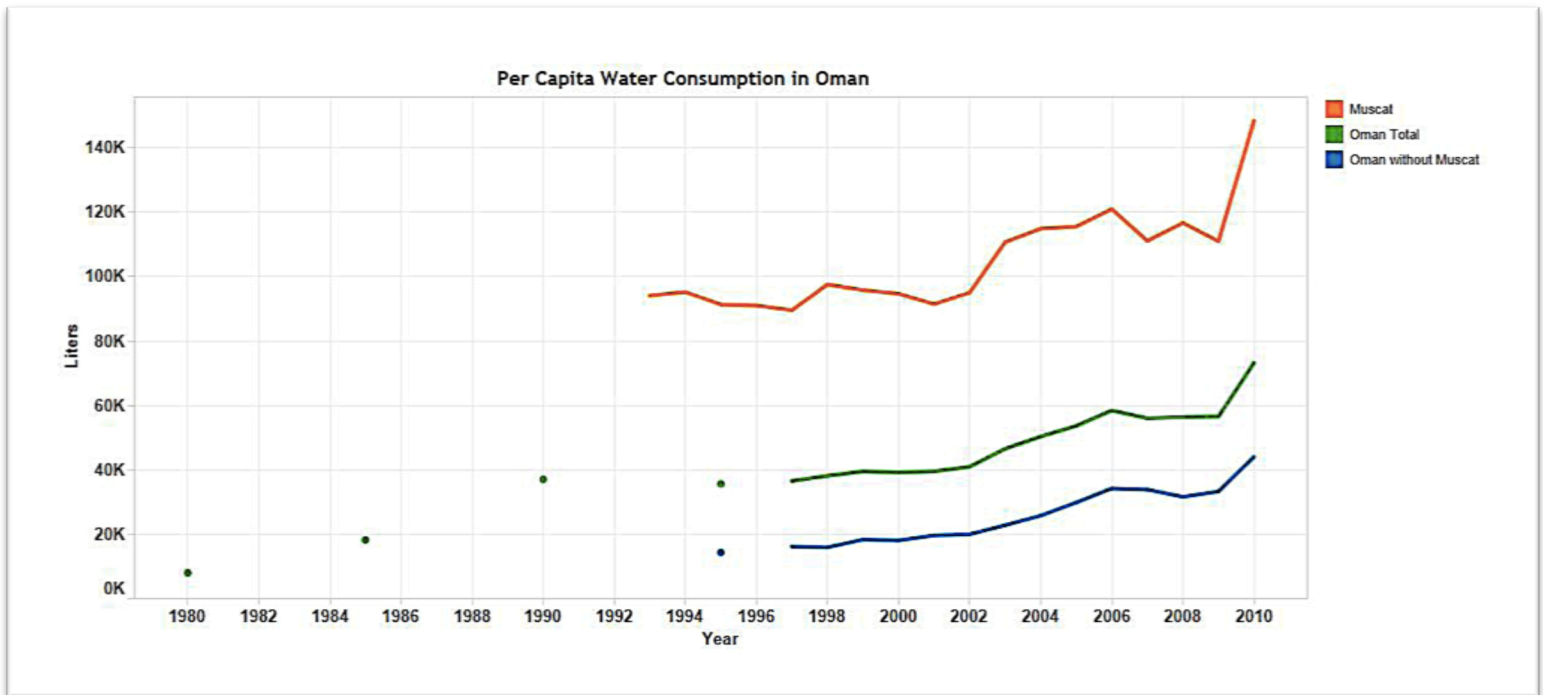


Figure 2: Per Capita Water Consumption in Oman

To complicate matters, we would expect that people would be more conservative in the countryside and less so in the city because individuals living in each environment have become accustomed to different standards of living and routines involving water use. This is also a flawed explanation, because *half* of the Omanis I interviewed expressed that they commute back and forth between their family home in the countryside and their second house in the city as often as once or twice per week, and admitted to changing their habits of water use each time.¹⁰ This is a widespread phenomenon in Oman and one interviewee estimated that around 40 percent of the population of Muscat returns to their family home

¹⁰ Interviews 1, 4, 7, 10, 11, 12, 13.

in the countryside every weekend.¹¹ This frequent, circular migration, or commuting, shows that individuals have not become acclimatized to one level of resource use or another, but instead they constantly *switch* between different consumption habits.

This presents a more fascinating question. Given that the ease of obtaining water is roughly equal in the city and countryside, why do Omanis change their behavior and ethical perspective on water use when moving between rural and urban areas? How can they reconcile increased water use in the city while they simultaneously hold the conservative Omani water ethic as a core conviction—a seemingly contradictory belief?

I argue that Omanis do not change their water usage only based on scarcity or ability to consume but rather based on the symbolism that their surrounding community attaches to their resource use. In urban and rural Oman, globalization and cultural evolution have introduced competing symbols that support two very different water ethics. To reduce cognitive dissonance, Omanis compartmentalize each ethic in relation to different community settings and go through a process of switching between their ethical frameworks when traveling between the countryside and urban centers.

The results of this study point clearly to the different types of substance and symbolic meanings of water as key pressures driving resource use. Looking at the broader picture, analyzing both physical and symbolic pressures on culture can illuminate much more subtle understanding of complex ethics and may be useful to explore seemingly contradictory behavior in many other contexts. Environmental ethics are changing rapidly all over the world as development trends have put traditional communities and cultures in flux. As an analytical tool, exploring how physical resources take on symbolic meanings can help

¹¹ Interview 1. Anecdotally, given the surge in traffic leaving Muscat on Wednesday nights, I would say that this is not an unreasonable estimate. (The weekend in Oman is on Thursday and Friday, due to the Islamic calendar.)

explain the dramatic increase in water use in much of the world and can help policy makers
frame public awareness and manage demand on environmental resources.

Background

To understand this analysis of water use trends, it is necessary to paint a picture of the landscape and various cultural contexts present in the Sultanate of Oman. The golden dunes of the Ash Sharqiyya Sands and the villages of whitewashed, arabesque houses tucked between rocky mountains conjure up scenes from Lawrence of Arabia. There are few inhabited places on earth that are as arid as Oman.¹² For much of the country, rainfall averages between 50mm and 150mm per year. With temperatures often over 110° Fahrenheit in summer, evaporation of this precious resource can reach up to 95 percent in some areas.¹³ Located on the tip of the Arabian Peninsula, this small kingdom has been somewhat isolated from the rest of the world by seas of sand on its western and southern borders and by the Indian Ocean to the East.

Oman is a small country with slightly under 3 million citizens. At the beginning of the Common Era, Oman was the world's main source of frankincense; a product traded on the Silk Road that carried a greater value than gold and was a commodity highly sought after in both Europe and Asia.¹⁴ Oman's strategic position on the Indian Ocean has made it a subtle power in the region, and during the eighteenth and nineteenth centuries Oman was the center of a trading empire, controlling ports as far east as India, and as far west as Tanzania.¹⁵ However, after the peak of its power during the Age of Mercantilism, Oman

¹² Ministry of Regional Municipalities, Environment and Water Resources, *Water Resources in Oman* .

¹³ *Ibid.*, 22-23.

¹⁴ Calvin H. Allen, *Oman : The Modernization of the Sultanate* (Boulder, Colo.; London, England: Westview Press ; Croom Helm, 1987).

¹⁵ J. C. Wilkinson, "Muscat and Oman," in *Modern Oman: Studies on the Politics, Economics, Environment and Culture of the Sultanate*, eds. Andrzej Kapiszewski, Abdulrahman Al-Salimi and Andrzej Pikulski (Krakow-Muscat: Ksiegarnia Akademicka, 2006) 47.



Figure 3: Landscapes of Oman

became a reclusive kingdom, a place rarely visited by foreigners and for a century it was largely untouched by the globalizing trends of the Industrial Revolution.¹⁶

By the mid-20th century, under the rule of Sultan Said III bin Taimur, the government had put little effort into adapting to the model of statehood set by the imperial powers of the West. However, with the pressures of globalization growing and the demand for Middle Eastern oil beginning to rise in the 1940s, the Sultanate began to open up to the outside world.¹⁷ In the 1950s, the son of the Sultan, Qaboos bin Said, traveled to the United Kingdom for the first time to pursue higher education.¹⁸ During his time in Britain, Qaboos was greatly impressed by the development and standard of living in the West and began to envision the modernization of the Sultanate.¹⁹

In the late 1960s, Qaboos returned to Oman. With the aim of modernizing his country, Qaboos staged a coup against his father, a ruler that had been roundly criticized for not doing enough to support his people.²⁰ In 1970, he deposed his father and took control of the government, becoming Sultan Qaboos bin Said. In his first, famous speech to the nation, Sultan Qaboos legitimized his rule, saying, “I have watched with growing dismay and increasing anger the inability of my father to use the new found wealth of this country for the needs of its people. That is why I have taken control.”²¹

Since his ascension to the throne in 1970, Sultan Qaboos has overseen a dramatic period of national modernization, referred to by Omanis as the “Renaissance.” During the Omani Renaissance, Sultan Qaboos focused heavily on improving social services, using new

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ministry of Information, "Autobiography of Sultan Qaboos," Sultanate of Oman, omanet.om (accessed 4/10, 2013).

¹⁹ Ibid.

²⁰ Uzi Rabi, "Oman Under Qaboos: The Emergence of a New Diplomatic Style in the Gulf," in *Modern Oman: Studies on Politics, Economics, Environment and Culture of the Sultanate*, eds. Andrzej Kapiszewski, Abdulrahman Al-Salimi and Andrzej Pikulski (Krakow-Muscat: Ksiegarnia Akademicka, 2006) 99.

²¹ Ibid.

oil revenues to complete vast infrastructural projects that allowed urban centers to grow for the first time in recent history.²² Within a span of just 40 years, the capital of Muscat and a handful of other towns became modern cities.

Oman today presents a rare opportunity for scholarship as a natural cultural and social experiment. Oman's isolation from the rest of the world until 1970 has controlled for many variables in globalized societies. Until very recently, Omani society was quite stable and homogenous, making the dramatic cultural changes that have occurred alongside rapid development all that much more striking.

Today, Omanis live split between traditional and modern lifestyles. Many young people are well educated and instead of practicing subsistence agriculture, they now get jobs in the new urban centers. Individuals from the post-Renaissance generations however, are also very connected to their families' rural community. Individuals living in the capital city of Muscat maintain close ties to their ancestral communities, regularly visiting and even spending long periods of time in their families' hometowns. The maintenance of two lives—one in the city and the other in the countryside—creates a pattern of frequent, circular migration that is very different from examples of urbanization in which the movement from rural to urban areas is more permanent. As participants in this study report, Omanis regularly encounter two different lifestyles and systems for using water.

Traditional Systems of Water Use in Rural Communities

Most Omanis traditionally sourced their water from an ancient network of aqueducts called the *aflaj* (plural of *falaj*).²³ These channels carry water from the mountains in the north

²² Ibid., 100.

²³ A. Al-Ghafri, T. Inoue and T. Nagasawa, "Irrigation Scheduling of Aflaj of Oman," *University of Hokkaido. Wwww.Inweb.Unu.Edu/Inweb/Drylands/Publications/AlGhafri.Pdf* (2007).

to many towns in the interior of the country. Like the Roman aqueducts, the system in Oman is quite sophisticated, using gravity alone to transport water over long distances.²⁴ Most of the *aflaj* were constructed between 1,500 and 2,500 years ago, with roughly 75 percent of the original channels still in use today.²⁵ The *aflaj* are considered national treasures by Omanis and several of the channels have been preserved as UNESCO World Heritage Sites.

Figure 4: Wadi Shab



Today, there are over 3,000 *aflaj* in use, providing 460 million cubic meters of water per year to Oman's rural villages.²⁶ Traditionally, the *aflaj* system and groundwater wells supplied all of the water used in Omani villages. At present, *aflaj* and traditional wells supply about two thirds of domestic water use.²⁷ The remaining third of the water required for domestic household and industrial use is produced through the desalination of seawater.

There are three types of falaj in Oman: *ghaili*, *aini* and *daudi*. A *falaj ghaili*, is a channel that is built alongside a natural valley

²⁴ Ministry of Regional Municipalities, Environment and Water Resources, *Water Resources in Oman*, 37 .

²⁵ Ibid.; Ministry of Regional Municipalities, Environment and Water Resources, *Aflaj Inventory Project Summary Report*, 10 .

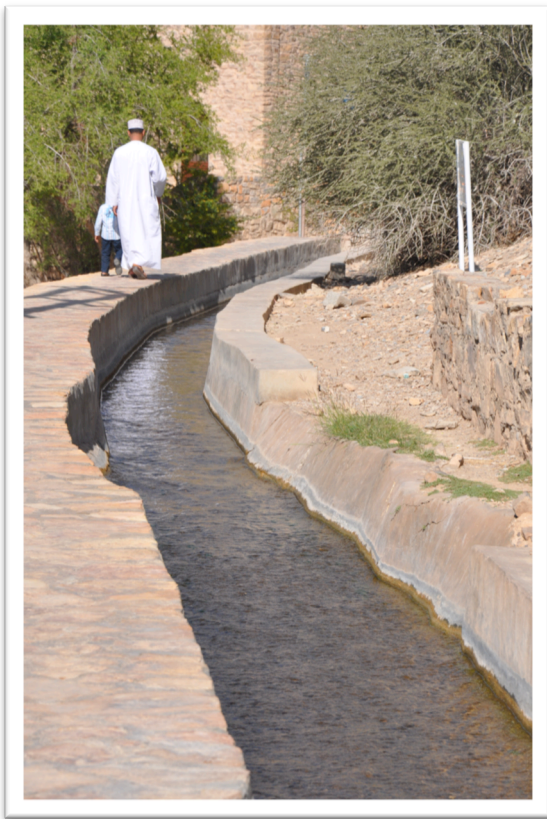
²⁶ Ibid., *Aflaj Inventory Project*, 10-11.

²⁷ Ministry of Regional Municipalities, Environment and Water Resources, *Water Resources in Oman*, 82 .

stream, known as a *wadi*. A *falaj ghaili* simply diverts the surface water from the stream and carries it above ground to the village or demand area. A *falaj aini* is a channel that carries water from a naturally occurring groundwater spring or *ain*. Finally, a *falaj daudi* is a subterranean aqueduct that carries groundwater to a town. All *falaj* types (and especially latter) require regular maintenance and community participation to remain functional.²⁸

Water from a *falaj* is distributed according to a mixture of local custom and Islamic law. While each village has its own specific rules for governance, there are some universal features to this system.

Figure 5: Falaj Daris, a UNESCO World Heritage Site



1. Water is a public resource and the community as a whole has rights to the water, rather than individuals. It is illegal to permanently redirect water into your own home.²⁹

2. In order to avoid pollution, different sections of the falaj are strictly limited to different uses. (eg. Public areas for washing must be located downstream from where drinking water is sourced, etc.)³⁰

3. Water shares for irrigation of private gardens are divided by time, and individual households must take water from the main

²⁸ Al-Ghafri, Inoue and Nagasawa, *Irrigation Scheduling of Aflaj of Oman*.

²⁹ Ibid.

³⁰ Ibid.

falaj only during the period of time allotted to them.³¹

4. Responsibility for managing the water rotations is delegated to the *wakil*, a democratically elected decision maker who oversees and coordinates water distribution. At least one representative from each family in a community must participate in regular community council meetings where distributions are decided. They must present any conflicts they have to the *wakil* and the local Islamic court for adjudication.³²
5. Each household must send members to work with others in the community to maintain their local section of the *falaj*.³³

The amounts allocated to personal drinking water, wash-water and irrigation is decided by Islamic law, with overuse being viewed as a very serious sin.³⁴ As scholar Calvin Allen describes, the societal rules for managing water were quite sophisticated, as all water rights and distributions were recorded and validated by a village official.³⁵ Many of these features are also present in the traditional governance of communal wells.

It is necessary to note the emphasis that the traditional society placed on recorded rights and distribution. This has two aspects: First, *falaj* governance is based on the concept of community rights over individual rights.³⁶ Systems based on community rights require that individuals are effectively aware that their right to water and level of consumption should not hinder others from equal access. Additionally, the village official that Allen describes would have undoubtedly been a local religious leader. The tradition of environmental conservation in this region is inextricably connected to the teachings of Islam, and this

³¹ Ibid.

³² Ibid.

³³ Ibid.

³⁴ John Craven Wilkinson, *Water and Tribal Settlement in South-East Arabia : A Study of the Aflāj of Oman* (Oxford [Eng.]: Clarendon Press, 1977)74.

³⁵ Allen, *Oman : The Modernization of the Sultanate*, 15.

³⁶ Al-Ghafri, Inoue and Nagasawa, *Irrigation Scheduling of Aflaj of Oman*, 2-3.

connection must not be overlooked when examining the symbolic importance of natural water sources.³⁷

New Communities and New Sources of Water

Young Omanis in particular often belong to two sets of communities, a rural or traditional community and an urban one. The traditional community comprises an extensive social web of family life and close friendships. Omanis typically have large social networks and most aspects of daily life are shared with others. However, in recent decades, many young Omanis have created secondary homes in the growing urban hubs in order to pursue modern education and employment opportunities. Individuals often spend the weekdays in the city and then spend each weekend at their family home. Commuting regularly between these two homes creates a social dynamic in which most Omanis consider their true social sphere to be their traditional community, making relatively superficial relationships with city acquaintances. Balancing these two social environments has had a great impact on many aspects of Omani life, and may in part account for the conflicting perceptions of water use in modern Oman.

While in urban areas, and particularly in the capital area of Muscat, Omanis obtain water from a very new resource: desalinated water. The first desalination plant in Oman was built in 1976 in Al Ghubra, and produces 58 million cubic meters of water per year.³⁸ As the coastal cities grew, other desalination plants were built to keep up with demand. These plants supply virtually all of the freshwater consumed in the capital area of Muscat, and have increasingly supplemented the water budgets of towns in the interior.

³⁷ Ibrahim Ozdemir, "Toward an Understanding of Environmental Ethics from a Qur'anic Perspective," in *Islam and Ecology: A Bestowed Trust*, eds. Richard Foltz, Frederick M. Denny and Azizan Baharduddin (Cambridge, MA: Harvard University Press, 2003)3.

³⁸ Ministry of Regional Municipalities, Environment and Water Resources, *Water Resources in Oman*, 50.



Figure 6: Al Ghubrah Desalination Plant

The new distribution system and perceived availability of potable water in urban Oman makes consumption indistinguishable from that in any developed country. Almost all urban houses have plumbing and Western style kitchens and bathrooms. Each house has a water meter that records water use, and instead of paying for a certain quantity of water in advance (as is the case with purchasing water in the countryside) urbanites consume water first and then receive a monthly bill after the fact.³⁹

In general, water is managed by the technocratic agencies of the Public Authority of Electricity and Water (PAEW), and by the Ministry of Regional Municipalities, Environment, and Water Resources (MRMWR). These two bureaus handle all aspects of infrastructure maintenance, leaving few avenues for urban citizens to participate in water governance. As the government has taken on the responsibility of providing water to the nation, Omani citizens, now perceived as consumers instead of co-managers, have come to

³⁹ Interview 1.

accept this role for the government. Such a change in governance has altered expectations about water management, with paying individuals in urban areas feeling entitled to a constant supply of water.

In order to meaningfully compare these different contexts of water use, the following review of several academic dialogues will help create a conceptual framework for analyzing the interview data and explaining the paradox of Omani Water ethics.

Part II: Conceptualization of Research

Literature Review

“The more humans seek to control water and socialize it, the more power water and variations in the water landscape will exercise over societies.” ~ Tvedt & Oestigaard⁴⁰

The interactions between society and water resources are extremely intimate and complex. Most disciplines in the social sciences present useful lenses on this topic, many of which are relevant to the creation of cultural norms for water use or ‘water ethics.’ This chapter explores the interdisciplinary scholarly dialogues that will inform an analysis of changing perceptions of water use in Oman.

The first section of this literature review outlines an analytical framework for explaining the impact of culture on resource use. The framework focuses on the physical and symbolic pressures in a specific environment as the origin of cultural norms, and elaborates on this framework by describing how people combine these norms into ethics for water use. The following section examines the context of traditional Omani society in an effort to understand the nexus of symbol and substance in the creation of the conservative water ethic. The final two sections illustrate how Western and Islamic notions of development have altered the relationship between physical reality and symbolic meaning, which has ultimately produced a new perception of ethical water use.

Water Ethics as a Product of Substance and Symbol

In *A History of Water*, Tvedt and Oestigaard argue that there are three layers of human perception that create the relationship between people and water.⁴¹ The first layer is the physical perception of water in different forms. This includes knowledge of the

⁴⁰ Terje Tvedt, Terje Oestigaard and R. Coopey, *A History of Water* (London: I.B. Tauris, 2010) 10.

⁴¹ *Ibid.*, 9.

availability of water and its practical geography. The second layer is humanity's adaptations to physical realities, such as development of systems of governance or technology and practical means of transporting and using water. I will refer to these two layers in tandem as a perception of water as a substance; described by a tangible relationship between people and resource. Tvedt and Oestigaard's third layer is the "cultural concept" of water that shapes our views on water conservation and consumption. I build off of this idea through a discussion of the symbolic nature of water in the arid Middle East. Taken together, the perceptions of substance and symbol provide analytical categories for the different pressures in modern Omani life that affect resource use.

Until recently, most scholarship on norms of water use focused on the physical reality of water availability as a way to understand the construction of relationships between society and water. Most literature published before the turn of the millennium focused solely on the economic pressure of scarcity to explain norms of water use, giving increased attention to economic models of supply and demand and rational schemes of allocation.⁴² Given the aridity of the Middle East and the necessity for communities to adapt to this scarcity, it is easy to view conservation as a product of pure economics. This method of analysis is often utilized by government agencies to explain trends in water use, yet the process of using economics alone is discredited by many social scientists who argue that water use is also governed by subtle cultural pressures or "social ecology."⁴³ Still, physical scarcity is an important aspect to consider in dissecting perceptions of water use.

⁴² J. A. Allan, *The Middle East Water Question : Hydropolitics and the Global Economy* (London; New York: I.B. Tauris, 2002), 111.; R. C. Griffin, *Water Resource Economics: The Analysis of Scarcity, Policies, and Projects* MIT Press Cambridge, MA, 2006), 37.

⁴³ Mohamed Larbi Bouguerra, *Water Under Threat* (Bangkok, Thailand; Black Point, Nova Scotia; Bangalore, India; Kuala Lumpur, Malaysia; Cape Town, South Africa; London; New York; New York: White Lotus ; Fernwood Pub. ; Books for Change ; SIRD ; David Philip ; Zed ; Distributed in the USA exclusively by Palgrave Macmillan, 2006).; J. Blatter and H. Ingram, *Reflections on Water: New Approaches to Transboundary Conflicts and Cooperation* MIT Press, 2001), 20.

For Allan, humans interact with many different types of physical water resources: blue, brown, green and virtual.⁴⁴ Blue water appears in liquid form in rivers, canals and lakes. Brown water refers to the moisture within the soil that feeds all plant life. Green water is the amount of water stored in plants, particularly in vegetables, fruits and other comestibles. Finally, virtual water is the amount of blue and green water that a country can afford to import or produce artificially.⁴⁵ Allan's widely cited categorization of different physical types of water is very helpful in advancing the simplistic models of resource economics, and lends some insight into the way that Omanis experience the physical water resources around them. Because of the geographical reality, water resources in all of these categories are extremely limited in Oman. Furthermore, as this thesis will explore, dramatic changes in the perceived availability of blue, green and virtual water will partially account for shifting ethical structures.

Water as a physical resource is also understood in terms of the technology that is used to make it available. Water can be transferred in canals and pipes, either public or private, with high or low regulation and cost. Some of the technologies used are visible and the processes by which they produce water are easily understood, such as with a simple well. Other sources, such as desalination plants, are less transparent to the average citizen. Through changing peoples' awareness and perception of the source of their water, technology can aid or hinder the accuracy with which people use and conserve it.

While the importance of environmental reality is uncontested, societal perceptions of water are not solely grounded in the reality of resource use. Symbolic meanings for water use have a powerful presence in religion and culture.⁴⁶ Lykke Syse and Oestigaard champion this

⁴⁴ Allan, *The Middle East Water Question : Hydropolitics and the Global Economy*, 33.

⁴⁵ Ibid.

⁴⁶ Bouguerra, *Water Under Threat*, 18.

concept, elevating the importance of studying perceptions of water in relationship to culture.⁴⁷ Furthering this argument, Tvedt and Oestigaard conduct a comparative history of ideas of water, in which they describe a myriad of cultural meanings placed on the resource in different religions and regions of the world.⁴⁸ They argue that water bridges the ‘nature-society divide,’ because its use and management are thoroughly the products of socialization.⁴⁹ The authors pay careful attention to the way that images of water are produced in a landscape, arguing that these images of nature carry connotations that are important within culture; shrouded in “webs of significance.”⁵⁰

As Strang argues, water is symbolized in many ways within the contexts of “myth, art, ritual and everyday practice.”⁵¹ Within most religious cultures, water takes on holy significance as a metaphor for purity, life, divine power etc. Water plays an essential role in most creation myths, and is nearly always considered sacred.⁵² Water is used in the rituals of all major faiths to symbolize everything from spiritual cleansing to bodily healing.⁵³ In Islam and many other religions, water resources are a gift from God (*Allah*) to man and therefore any change in water availability can be understood as a divine message.⁵⁴ For the arid regions of the Middle East, the harsh desert environment symbolizes a place of death, and water found in such an environment is considered a miracle and blessing.⁵⁵

⁴⁷ Karen V. Lykke Syse and Terje Oestigaard, *Perceptions of Water in Britain from Early Modern Times to the Present: An Introduction* University of Bergen, 2010).

⁴⁸ T. Tvedt and T. Oestigaard, "A History of the Ideas of Water: Deconstructing Nature and Constructing Society," *A History of Water. Series 2* (2010), 1-36.

⁴⁹ Ibid.

⁵⁰ Ibid.; C. Geertz, "Thick Description: Toward an Interpretive Theory of Culture," *Culture: Critical Concepts in Sociology* 1 (1973), 173-196.

⁵¹ Veronica Strang, *The Meaning of Water* (Oxford; New York: Berg, 2004) 67.

⁵² G. Chamberlain, *Troubled Waters: Religion, Ethics, and the Global Water Crisis* Rowman & Littlefield Pub Incorporated, 2008).

⁵³ Strang, *The Meaning of Water*, 85.

⁵⁴ Ozdemir, *Toward an Understanding of Environmental Ethics from a Qur'anic Perspective*, 17.

⁵⁵ Shmuel Burmil, Terry C. Daniel and John D. Hetherington, "Human Values and Perceptions of Water in Arid Landscapes," *Landscape and Urban Planning* 44, no. 2 (1999) 102.

The symbolic nature of water is not restricted to religious interpretation. As Tvedt and Oestigaard contend, water can also be viewed as “natural or domesticated” and its use and management can carry developmental connotations.⁵⁶ To harness the power of water, to control its flow and direct it for human use and consumption is seen as a triumph of man, and dams and hydraulic infrastructure are “not mere technological inventions, but also symbols of power.”⁵⁷ In *The Meaning of Water*, Strang concurs strongly with this point, discussing the ways in which the scientific revolution in Western Europe dramatically flipped the power balance between man and the environment, creating new perceptions of resources and the superiority of human intellect over nature.⁵⁸ As Oman is currently undergoing a similar (though much more rapid) process of societal transition, this relationship between water use and perceived developmental achievements will provide a cornerstone for analyzing the changing Omani views.⁵⁹

Taken together, perceptions of water as symbol and substance seem to inform water ethics. The concept of water ethics is a topic of discussion within the larger field of environmental ethics, a field that emerged out of the environmentalist movements of the 1960s and has garnered increased attention in the 21st century. In a survey of the field, West describes the three major theories of environmental ethics: ecocentrism, anthropocentrism and deep ecology.⁶⁰ Ecocentrism, or Aldo Leopold’s “land ethic,” is the notion that the environment itself has rights that should not be violated. Anthropocentrism, by contrast, is

⁵⁶ Tvedt and Oestigaard, *A History of the Ideas of Water: Deconstructing Nature and Constructing Society*, 1-36

⁵⁷ Ibid.; Karen Litfin, "Towards an Integral Perspective on World Politics: Secularism, Sovereignty and the Challenge of Global Ecology." *Millennium (03058298)* 32, no. 1 (2003).

⁵⁸ Strang, *The Meaning of Water*, 28.

⁵⁹ Notably, the scholars mentioned above share a consensus that the extent to which water is understood as a symbol is quite limited and that additional research in this emerging field is much needed. My research of the Omani case study will build off of their conceptualizations in an attempt to further the dialogue on how the symbolic meaning of water changes through the process of rapid urbanization and development.

⁶⁰ C. A. West, "For Body, Soul, Or Wealth: The Distinction, Evolution, and Policy Implications of a Water Ethic," *Stanford Environmental Law Journal*. 26, no. 1 (2007) 204.

the view that humans must protect the environment only to the extent that is necessary for human survival and wellbeing. Finally, Deep Ecology focuses on the sustainability of entire ecosystems, arguing that ethical behavior should not permanently alter or upset the natural balance of an ecosystem.⁶¹ This spectrum of ethical constructs places humans in different roles, as either protector of nature, consumer of nature, or as part of a system. In Oman, urban and rural water users have had to navigate between each of these roles, bringing these theories of environmental ethics to life.

As further defined by West, “a water ethic is the way a community or an individual views water usage, allocation, and existence.”⁶² In addition, I argue that a water ethic is a moral code created by the amalgamation of our understanding of physical limitations and symbolic meaning of water. Our water ethic defines what types of water use we perceive as good or bad, a hierarchy of valid water needs and wants, and how strongly we value conservation. A water ethic is informed by the availability of the physical resource and the tangible systems of governance that allocate water as well as by socialized norms of water use that have deep religious and symbolic origins. But while this explains the evolution of a particular ethic, how can we understand the Omani situation in which individuals seem to constantly shift between different modes of behavior? The following section outlines an analytical framework to explain this phenomenon.

Cultural Toolkits and Ethical Code Shifting

As a framework for analysis, Ann Swidler’s work explaining the impact of culture on peoples’ actions is exceptionally relevant on two fronts. Firstly, she acknowledges that

⁶¹ Ibid.

⁶² Ibid.

culture is not a monolithic set of values that drive behavior, but rather a more flexible “tool kit” of individual norms that people can pick and choose from to solve problems. Secondly, she draws an important distinction between peoples’ behavior in “settled” and “unsettled” cultural environments. Understanding unsettled cultures is particularly useful given that parts of Omani society are greatly in flux.

In her 1986 article “Culture in Action,” Swidler first argues that the traditional sociological method for explaining culture at the time was too focused on identifying abstract values which caused people to make certain choices or act in a certain way. In the “values paradigm,” culture is a highly fixed and internalized set of values, offering little agency to the actor.⁶³ Swidler contests this framework elaborating instead on the concept of a cultural “tool kit.”⁶⁴

A cultural toolkit is a collection of different “symbols, stories, rituals and world-views, which people may use in varying configurations to solve different kinds of problems.”⁶⁵ Her method for analyzing human behavior looks at a broad spectrum of cultural and physical influences that define individuals’ “strategies for action.” This somewhat piecemeal approach to analyzing culture allows us to consider that individuals may hold and act upon conflicting interests within their culture.

Swidler’s cultural tool kit framework has been adopted and adjusted by many to explain why certain populations pursue strategies of action that do not align with general cultural values.⁶⁶ In one example, Matthew R. Lee explores trends of violence and homicide

⁶³ Ann Swidler, "Culture in Action: Symbols and Strategies," *American Sociological Review* (1986) 273.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Willis Jenkins, "Ecological Management, Cultural Reform, and Religious Creativity," *Union Seminary Quarterly Review* 62 (2011), 1-17.; Laurel Kearns, "Saving the Creation: Christian Environmentalism in the United States*," *Sociology of Religion* 57, no. 1 (1996), 55-70.; Matthew Lee, "Reconsidering Culture and Homicide," *Homicide Studies* 15, no. 4 (2011), 319-340.; Michèle Lamont and Mario Luis Small, "How Culture Matters:

in impoverished groups in the United States, explaining that individuals can simultaneously believe killing is fundamentally bad and still see it as a viable “strategy of action” in certain cultural situations.⁶⁷ This is interesting because it clearly challenges the values paradigm: People do not value killing, therefore cultural value does not explain their action. Instead they draw on a flexible tool kit of ethics to internally justify something they do not value. To transpose this logic to the Omani case study, Omani culture clearly does not value using water unsustainably, yet something in their cultural toolkit must allow them to justify the departure from the conservative traditional water ethic.

Ethics and morals are an important part of a cultural tool kit as they advocate for certain strategies of action and reject others. Furthermore, it is possible to have more than one ethical framework within a culture that individuals can invoke at different times, depending on the circumstance. I argue that this is precisely what is happening in Oman, where two different ethics are being invoked to limit water use in some cases and legitimize increased use in others.

The question then becomes: When do people alter or construct new “strategies of action” than those they are familiar with? Swidler effectively answers this question by defining cultures as “settled” or alternatively “unsettled.”⁶⁸ Settled cultures are those in which very little changes in the routine of everyday life, and certain patterns of strategies for action are codified. In a “settled” cultural environment, the actor knows the parameters of acceptable action in any social situation, and strategies are so normalized that they appear to be common sense.⁶⁹ In such a situation, “culture and structural circumstance seem to

Enriching our Understanding of Poverty," *The Colors of Poverty: Why Racial and Ethnic Disparities Exist* (2008), 76-102. And many others...

⁶⁷ Lee, *Reconsidering Culture and Homicide*, 323.

⁶⁸ Swidler, *Culture in Action: Symbols and Strategies*, 273.

⁶⁹ Ibid.

reinforce each other.”⁷⁰ Cultural symbols in settled systems are used to support practical, ethical behavior and vice versa. The following diagram describes how the pressures of substance and symbol construct a cultural tool kit which in turn produces a water ethic.

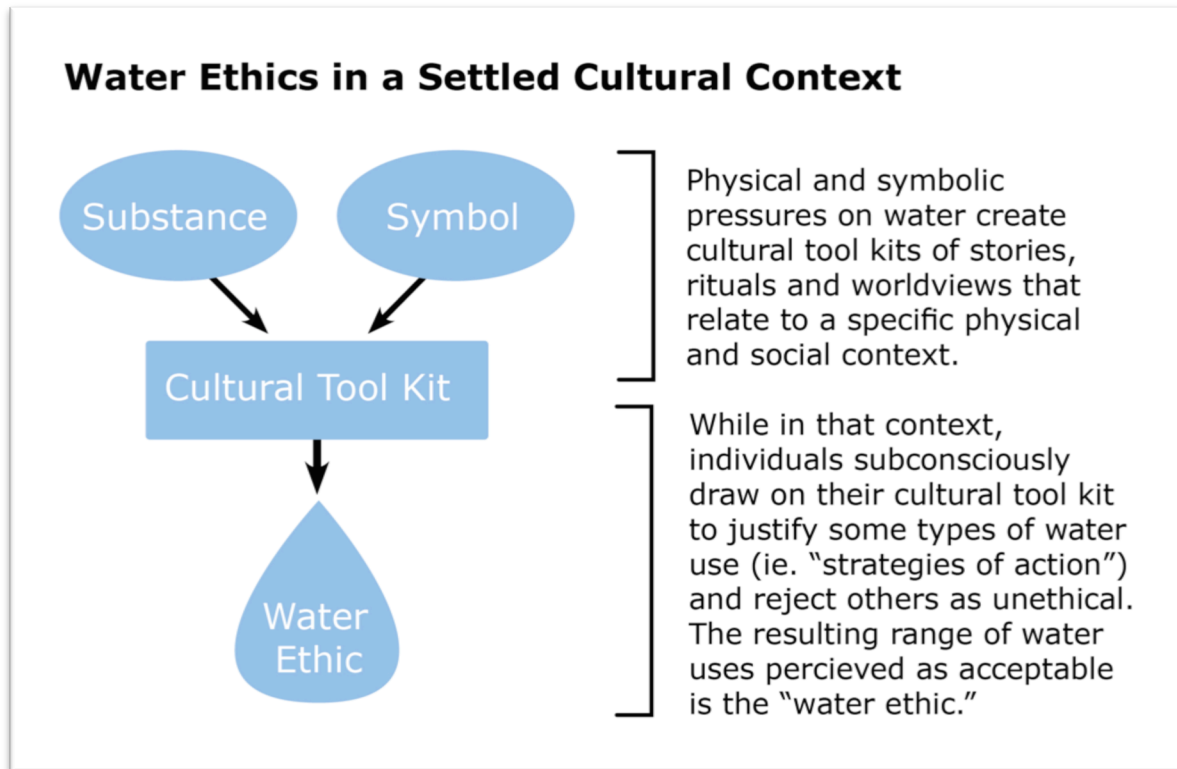


Figure 7: Water Ethics in a Settled Cultural Context

This simple framework helps to explain the evolution of the traditional Omani water ethic, but does little to explain the nuance of shifting ethics between multiple cultural contexts. Unsettled cultures are those in which the routines of traditional life have been altered or removed, leading individuals to create new patterns of acceptable action.⁷¹ In unsettled contexts, Swidler argues, “values are unlikely to be good predictors of action, or indeed of future values,” because the traditions and institutions that normalized those values

⁷⁰ Ibid.

⁷¹ Ibid.

are no longer applicable in the new cultural context.⁷² To get a better picture of modern Omanis' cultural tool kit, we need to expand the settled framework to factor in new sources of substance and symbolic pressures.

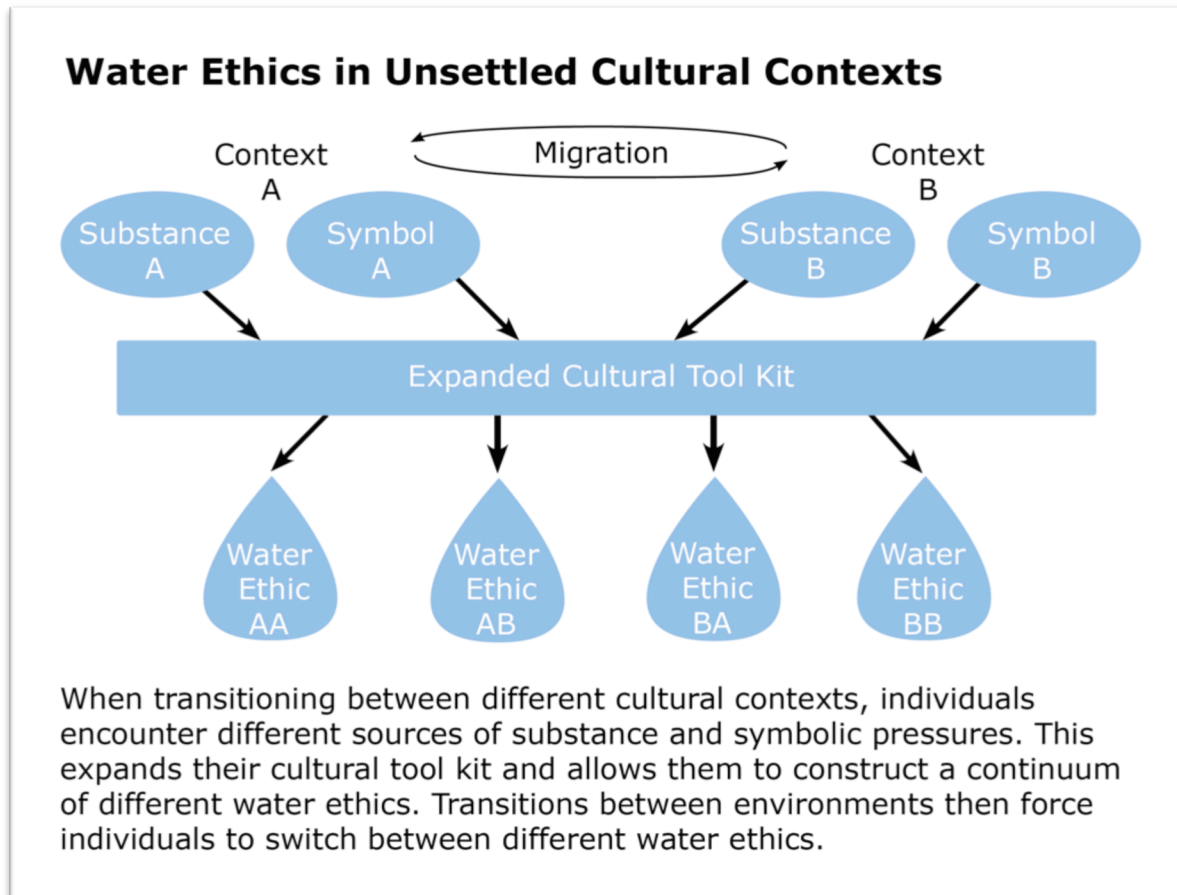


Figure 8: Water Ethics in Unsettled Cultural Contexts

The expanded cultural tool kit produced by pressures in multiple contexts allows an individual to pick and choose from a variety of stories, rituals and worldviews when formulating strategies of action. Omanis who commute regularly between the city and the countryside feel many conflicting pressures which produce a broad range of new possible strategies for water conservation and consumption. This allows individuals to form their

⁷² Ibid.; Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge; New York: Cambridge University Press, 1990).

own ethics in relation to specific pressures and contexts, rather than simply adopting the normalized ethics of a settled culture.

To borrow an analogy from sociolinguistics, it can be argued that alternating between different water ethics is a type of “code switching.” Linguistic code switching is the act of alternating between speaking in different registers of formality or different dialects based on one’s immediate social context.⁷³ When we speak we align ourselves with others and define ourselves through the symbolic attributes of a certain type of speech.⁷⁴ For example, a person can choose to speak quite informally with their friends, gaining social status by using popular phrases or slang. This same person can then suddenly switch to a more formal register of speech during a job interview in order to appear well educated and mature. In both cases, the individual seeks to associate themselves with positive cultural symbols, yet the different contexts require them to employ different “strategies of action” to achieve their goal.

Speech is not the only type of behavior that is subject to code switching. As Freya Mathews explains, environmental ethics are also highly subject to change based on our immediate social and environmental context.⁷⁵ Institutions and structures also play an important role by reinforcing norms of behavior, and when a person transitions between institutions they must change codes of conduct as well.⁷⁶ The concept of “ethical code switching” then helps to explain how individuals draw on their cultural tool kits in unsettled contexts to shape ethics and resolve cognitive dissonance.

⁷³ William B. Gudykunst, *Bridging Differences: Effective Intergroup Communication* SAGE Publications, Incorporated, 2003).

⁷⁴ Ibid.

⁷⁵ Freya Mathews, "Cultural Relativism and Environmental Ethics" IUCN Ethics Working Group Report No. 5, August, 1994).

⁷⁶ Ostrom, *Governing the Commons : The Evolution of Institutions for Collective Action*.

An exploration of the traditional and modern Omani water ethics in the following sections will illuminate specific shifts in substantive and symbolic meaning, which will provide insight on why Omanis can promote conservation and increasing consumption simultaneously.

The Creation of a Conservative Water Ethic

The traditional, conservative Omani water ethic was largely formed by the harsh reality of water scarcity, in an environment that necessitated systems of strict water governance to protect sources and limit water use. For centuries, the survival of many Omani villages relied on the ability of the people to share scarce water resources, leaving these norms deeply embedded within culture.⁷⁷ Before examining the literature that might illuminate the changes and complexities in the modern water ethic, it is necessary to understand the cultural foundations of conservation, and most importantly, the “settled” social context in which this mentality is expected. This section explores the traditional cultural tool kit for water use as a product of Common Property Resource Management (CPRM), a system of governance that requires participation and conscientiousness from every member of a community.

The cultural context that produces the conservative water ethic is the traditional water governance system that regulates the *aflaj* aqueducts in many rural villages of Oman. Historian John Wilkinson and anthropologist Mandana Limbert provide the most relevant accounts of culture surrounding water, illustrating the traditional Omani water ethic through ethnography.⁷⁸ As the *aflaj* are open to the public, the system of governance used in these

⁷⁷ Mandana E. Limbert, "The Senses of Water in an Omani Town," *Social Text* 19, no. 3 (2001) 37.

⁷⁸ Wilkinson, *Water and Tribal Settlement in South-East Arabia: A Study of the Aflāj of Oman*; Limbert, *The Senses of Water in an Omani Town*, 35-55.

villages relies on community-based management; system in which the water users themselves are responsible for limiting use and maintaining the resource.⁷⁹

Al Ghafri's work describes the rules by which water is allocated within the *aflaj* commons, giving special attention to the way in which the technology creates the perception of a public resource, its governance requiring constant participation by all community members.⁸⁰ Additionally, Allen describes that water was never allowed to enter private homes.⁸¹ This simple regulation meant that water was always considered a publicly shared commodity, or a commons, thus framing the perception of water as substance.

The type of community based management practiced in governing the Omani *aflaj* can be further classified as a system of Common Property Resource Management (CPRM). CPRM, as theorized by Elinor Ostrom, is a type of resource governance traditionally practiced all over the world, in which the rights to use a resource belong to a community, rather than to individuals, and community members have a strong personal incentive to conserve the resource.⁸² New economic theories on commons management and traditional systems of resource governance have been most influential in refuting Hardin's infamous *Tragedy of the Commons*, or the theory that when resources are held in common, individuals will follow selfish incentives to consume more than their sustainable share, resulting in the degradation of the resource.⁸³ Cox and Ostrom reject this hypothesis, citing case-studies of societies from all over the world that have highly developed cultural mechanisms to regulate and conserve a common resource.⁸⁴

⁷⁹ Wilkinson, *Water and Tribal Settlement in South-East Arabia : A Study of the Aflāj of Oman*, 98.

⁸⁰ Al-Ghafri, Inoue and Nagasawa, *Irrigation Scheduling of Aflaj of Oman*

⁸¹ C. H. Allen, *Oman Under Qaboos: From Coup to Constitution, 1970-1996* Routledge, 2000).

⁸² Ostrom, *Governing the Commons : The Evolution of Institutions for Collective Action*.

⁸³ Garrett Hardin, "The Tragedy of the Commons," *Science* 162 (1968), 1243-1248.

⁸⁴ S. J. B. Cox, "No Tragedy on the Commons," *Environmental Ethics* 7, no. 1 (1985), 49-61.; Elinor Ostrom, *Crafting Institutions for Self-Governing Irrigation Systems* (San Francisco, Calif.; Lanham, Md.: ICS Press ; Distributed to the trade by National Book Network, 1992).

The longstanding, resilient and in many cases sustainable case studies described by Ostrom share many similarities with Omani *falaj* management, producing the same incentives to conserve. Ostrom's case study of CPRM in Valencia, Spain, presents an interesting comparison. The system of managing public aqueducts in Valencia was developed under Moorish rule in the arid south of Spain. The governance structure is very similar to the *falaj* system, requiring community participation and monitoring that reinforce a conservative ethic. Similarly, where new, technocratic institutions were put in control of water, this ethic was no longer reinforced.⁸⁵ For the purposes of understanding the traditional Omani water ethic, Ostrom's work is interesting as it illustrates how the CPRM creates ritualistic "tools" embedded in the institution or governance structure to perpetuate conservative ethics.⁸⁶

Symbolism also plays an important role in defining the conservative water ethic. An individual's consumption of water in rural Oman is regulated by a community-wide pact, which is enforced largely through interpersonal relationships and most importantly, a religious environmental ethic.⁸⁷ Through the teachings of the Prophet Muhammad, Omanis came to view water conservation as transcendent wisdom. As Wilkinson describes, the allocation and amount diverted into personal drinking water, wash-water and irrigation was decided by Islamic law, with overuse being viewed as a very serious sin.⁸⁸ Thus, conserving water became a symbol of piety, providing another tool that could be invoked to maintain the conservative status quo.

⁸⁵ Ostrom, *Governing the Commons : The Evolution of Institutions for Collective Action*

⁸⁶ Ostrom, *Crafting Institutions for Self-Governing Irrigation Systems* .

⁸⁷ Chamberlain, *Troubled Waters: Religion, Ethics, and the Global Water Crisis*.

⁸⁸ Wilkinson, *Water and Tribal Settlement in South-East Arabia : A Study of the Aflāj of Oman*, 74.

Modernization and the Divergence of Urban Water

Governance

The Omani Renaissance brought many changes to water governance in Oman, primarily by redefining what “developed” or advanced water governance should look like. While the *falaj* system had sustained small Omani villages for several thousand years, it could not support the type of urban development that was expected of a modern state in 1970. Upon consolidating his power after a successful coup, Sultan Qaboos set many new development projects in motion, some of which dramatically altered the distribution and use of fresh water.

The greatest change was the development and expansion of Western technological infrastructure and systems of management. The most prominent historians on the Omani Renaissance, namely John Wilkinson, Calvin Allen, Ian Skeet, W. Lynn Risgsbee, Francis Owtram and Uzi Rabi provide a broad consensus on the use of Western (and largely British) models as a primary modernization strategy for the Qaboos administration. A massive wave of roads, schools, hospitals, sewage systems and piped water were rapidly put in place, bringing the new Omani government great respect from Western nations.⁸⁹ Yet, during this flurry of development, the participatory nature of traditional water management began to disappear in the newly urbanized capital and a few other small cities. These cities now provide an “unsettled” cultural context for water use.

In *Modern Oman*, Rabi explains the revolutionary impact of these imported Western structures of governance.⁹⁰ In the span of a single generation, the state took nearly complete control of managing water resources, with authority delegated to a small group of engineers

⁸⁹ Andrzej Pikulski, "Oman's Economic Development," in *Modern Oman: Studies on Politics, Economy, Environmenta and Culture of the Sultanate* (Muscat, Oman: , 2006)187.

⁹⁰ Rabi, *Oman Under Qaboos: The Emergence of a New Diplomatic Style in the Gulf*.

and technocrats. The dramatic reduction in community participation in most urbanizing population centers increased the citizens' dependence upon the state and upon the new technological infrastructure. These new systems of distribution and models of civil society are all examples of the trend of Westernization in Oman which illustrate the way that technological solutions to water scarcity were prioritized.

In addition, Western water governance carries the assumption that a government will provide as much water as consumers are willing to pay for.⁹¹ In essence it has changed the citizen's right to water from something that is the right of the community at large, to the right of an individual, which also changes the responsibility to conserve into a personal ethic. In an economy of scarcity, this was only made possible through massive technological and technocratic changes. Allan describes this developmental mentality as "water optimism," or the theory that physical scarcities are not necessarily a problem for development, if technology can manufacture new resources.⁹² The Qaboos administration's focus on building new desalination plants and securing large trade agreements for water intensive food (aka virtual water) are two apt examples of the way that water optimism has driven the policy discourse in Oman, prioritizing technology dependent modernity over the management and long-term security of naturally occurring resources. Allan's theory, posits that this sense of water optimism leads to a false sense of resource security and a general expansion of personal consumption, which is dependent on the artificial chain of supply.⁹³ This begins to show how changes in the technocratic and technological systems of water governance lead to a change in culture and the dissolution of the conservative water ethic.

⁹¹ Allan, *The Middle East Water Question : Hydropolitics and the Global Economy*.

⁹² Ibid.

⁹³ Ibid.

To most Western economists, Oman's miracle growth was also a product of a distinctly Western and industrial progression, which in turn relied on the changing water structure.⁹⁴ Piped and regulated water distribution systems were prerequisite for an urban, industrial society to emerge and these projects were taken on with great energy. The present dialogue on water economics further calls for the privatization of water markets,⁹⁵ a generic recommendation for development (often promoted by the World Bank) that the Qaboos Administration has followed through the establishment of a water regulating company, the Public Authority on Electricity and Water. Resource economists strive for efficiency, meaning that water, a limited physical resource is distributed according to supply and demand.⁹⁶ Pikulski, describes the success of the Sultan's sequence of five-year modernization plans, noting the priority and attention given to the development of water resources as a way of building a modern image for the state.⁹⁷

The new culture produced by the demographic shifts of urbanization and the introduction of piped water infrastructure in Oman has dramatically altered the relationship between people and the resource they once controlled. The personal and religious ties to water management disappeared and suddenly water became a consumer commodity, with its use newly unbounded by social norms and lauded by the international community. This shift is not unlike the one experienced by the British and many other European communities during the Industrial Revolution.⁹⁸ As Strang describes,

Demographic mobility [in 18th century Britain] dissolved many of the local structures in which water resource management had been embedded. Control over water was steadily abstracted from small and stable village communities, passing first to urban communities and semi-local water supply

⁹⁴ Pikulski, *Oman's Economic Development*.

⁹⁵ Griffin, *Water Resource Economics: The Analysis of Scarcity, Policies, and Projects*.

⁹⁶ This ultimate goal is morally questionable as often the greatest demand is assessed by the greatest willingness to pay, which doesn't necessarily reflect the true human value associated with this resource.

⁹⁷ Pikulski, *Oman's Economic Development*.

⁹⁸ Strang, *The Meaning of Water*.

*companies, then to larger and more distant suppliers which merged over and over, becoming grand corporations and municipal institutions.*⁹⁹

This precisely mirrors the changes to water governance in Oman. In addition, this shift in Western societies has also been described as a mechanism for increasing governmental power and control.¹⁰⁰ The water strategy of the Qaboos administration, just as in most of the Global North, is a method by which the government extends its reach into personal homes, gaining further national control by providing necessary goods and services. While not necessarily problematic, this changes the dynamic between consumers and substance.

While the economic theory of water markets and the potential of increasing water supply through technology have been quite popular in the development community, some scholars on developmental strategies for water have recently started to think twice about exporting Western technocratic systems. As Bandyopadhyay contests the economic and technocratic vision of water governance is seriously limited as Westernized methods of valuing water often miss the mark in the developing world, paying little heed to the social and cultural contexts of water. Such abstract economic modeling can be useful for some types of water allocation, and economics should be used to aid “equitable and efficient” allocations, however within different socio-religious contexts, the value of water may differ greatly.¹⁰¹ Bandyopadhyay focuses on the example of India, where British rule transplanted the engineering practices of Europe without regard for the traditional systems of governance. The result was decreasing community participation, increasing mismanagement and in many cases the degradation of water resources.¹⁰²

⁹⁹ Ibid.

¹⁰⁰ G. Hawkins, *The Ethics of Waste: How we Relate to Rubbish* Rowman & Littlefield Pub Incorporated, (2006).

¹⁰¹ J. Bandyopadhyay, *Water, Ecosystems and Society: A Confluence of Disciplines*. Sage Publications India Pvt Ltd, (2009)99-103.

¹⁰² Ibid.

As in many rapidly developing nations, the attitude in the final decades of the 20th century was that modernization was the highest goal and that all national resources should be utilized to build a “modern” society. Inherent in this goal statement is a particular vision of what “modern” water governance must look like. A small, currently emerging body of literature looks at the meaning of water in development, and scholars such as Strang and Bandyopadhyay are beginning to discuss the prestige associated with certain types of water governance. Functioning piped water systems have especially garnered international attention as a symbol and criterion of successful development since the Industrial Revolution in Britain.¹⁰³ Conversely, without piped water, a city or country is barred from being considered truly modern.¹⁰⁴ As the architecture of development in general was influenced by Western trends, it is important to remember that the Qaboos administration also looked to the West for mechanisms of water governance as an international symbol of prestige. This has had profound impacts on the Omani water ethic, creating new symbolic values of consumption (based on an artificial perception of substance) that seem to directly reject the notion of conservation. In the following section, we will see how Islamic teachings have been used to reconcile these two competing ethics.

The Aesthetic of Paradise within Islamic Modernization

While Western conceptions of modernity have certainly begun to influence Omanis’ cultural tool kits, the historic and contemporary ideals of Islamic development provide a crucial method of analyzing water as symbol and substance. Islamic development is a modernization strategy that closely adheres to the teachings of Muhammad and the mandates of the Qur’an. A rich scholarly discourse surrounds Islamic development, an arena

¹⁰³ Strang, *The Meaning of Water*

¹⁰⁴ Bandyopadhyay, *Water, Ecosystems and Society: A Confluence of Disciplines*.

in which reinterpretations of heavenly directives give way to new ideas about Islamic ethics within development. In the sphere of water governance, there are two main discussions that will inform the analysis of the Omani case. The first focuses on the notion of wasting water, while the second deliberates the image of Eden and man's role in beautifying the earth.

The first of these categories presents the religious underpinnings of the traditional Omani water ethic. *Qur'annic* scholarship shows a broad consensus on the issue of water preservation as virtually all scholars attest that Muhammad condemned wasting water.¹⁰⁵ The importance of this message is so deeply embedded in Islamic law that the word *shari'a* literally meant "the law of water" before it came to be used to mean "law" in general.¹⁰⁶ Given the arid climate in which Islam was born, this strong religious mandate to conserve water is not at all surprising. In fact, the language of the Qur'an on this subject is so clear and direct that it would be nearly impossible to misconstrue its' meaning.

What is also interesting about the scholarly dialogue is the consistency with which certain *suras* and *hadiths* are used for analysis. The following *hadith* is one of the strongest examples of Muhammad's mandate on water preservation, describing the sin of wastefulness even in the holy act of ablution:

God's Messenger appeared while Sa'ad was performing the ablutions. When he saw that Sa'ad was using a lot of water, he intervened saying: "What is this? You are wasting water!" Sa'ad replied, asking: "Can there be wastefulness while performing the ablutions?" To which God's Messenger replied: "Yes, even if you perform them on the bank of a rushing river."¹⁰⁷

¹⁰⁵ Ibrahim Abdul-Matin, *Green Deen: What Islam Teaches about Protecting the Planet* (Berrett-Koehler Publishers, 2010).; F. De Chatel, *Water Sheikhs and Dam Builders* (Transaction Pub, 2007).; Ozdemir, *Toward an Understanding of Environmental Ethics from a Qur'anic Perspective*; Saadia Khawar Khan Chishti, "Fitra: An Islamic Model for Humans and the Environment," in *Islam and Ecology: A Bestowed Trust*, eds. Richard Foltz, Frederick M. Denny and Azizan Baharduddin (Cambridge, MA: Harvard University Press, 2003).

¹⁰⁶ J. A. Allan and C. Mallat, *Water in the Middle East: Legal, Political and Commercial Implications*. (IB Tauris and Co Ltd, 1995) 128.

¹⁰⁷ *Musnad*. Translated by Ozdemir in Ozdemir, *Toward an Understanding of Environmental Ethics from a Qur'anic Perspective*, 14.

Almost all of the scholars mentioned above utilize or allude to this *hadith* in their works as it clearly establishes the ethical code for human water preservation. And, while the *hadith*'s clarity has made it a necessary citation for religious scholars, it has also made its teachings very accessible to the Islamic public. Part of the reason that scholars continue to use this *hadith* is because it is one of the most well known *hadiths* among Muslim populations. The works of Allen, Limbert and Owtram reinforce that this interpretation of water ethics was the predominant one for most Omanis before the Renaissance. Because of its fame, scholars readily draw on this *hadith* as it remains a pertinent lesson to the modern Islamic world.

Another *sura* that has furthered this scholarly consensus is the famous line “We [*Allah*] made from water every living thing”.¹⁰⁸ In this statement, *Allah* reminds his people that water is the source of life, and that it should be treated with great respect.¹⁰⁹ The Islamic texts thus confirm that individual water use transgresses Islamic law when water is wasted. This notion of environmental responsibility and stewardship is echoed in much other literature. Khawar Khan Chishti furthers this argument, describing a broad Islamic “environmental compromise” which is an inherent aspect of human instinct that Islam seeks to revive and awaken.¹¹⁰ This Islamic message of compromise and environmental responsibility flies in the face of Westernized modernization, contradicting the premise that humans have virtually unlimited rights to control nature. As Ozdemir details,

*The Qur'an and the sunna, stipulating that water is the basic need of life, place a number of obligations and responsibilities upon Muslims: the conservation of existing water supplies in the best possible way; the prevention of any activity that might lead to the pollution of water resources or spoil the purity and characteristics of the water; and never adopting an extravagant or irresponsible attitude in the consumption of water.*¹¹¹

¹⁰⁸ MAS Abdel Haleem, *The Qur'an*, OUP Oxford, 2005) 21:30.

¹⁰⁹ De Chatel, *Water Sheikhs and Dam Builders*; Ozdemir, *Toward an Understanding of Environmental Ethics from a Qur'anic Perspective*; Allan, *The Middle East Water Question : Hydropolitics and the Global Economy*.

¹¹⁰ Khawar Khan Chishti, *Fitra: An Islamic Model for Humans and the Environment*.

¹¹¹ Ozdemir, *Toward an Understanding of Environmental Ethics from a Qur'anic Perspective*, 15.

These responsibilities have been preserved as part of the Islamic ethic on resource use and continue to hold sway in the minds of Muslims around the world.

However, outside of the consensus on water preservation, the Islamic scholarly community projects many diverse viewpoints on the subject of ethical water use in pursuit of development. The difference in perspectives for many scholars can be boiled down to their definition of waste. As Islamic societies seek to develop their systems of governing, distributing and using water, what types of modern uses would Mohammad have dubbed wasteful and unethical? The rubric for ethical water use provided by the Prophet may have relevance for traditional types of water use, however it provides little guidance in respect to new infrastructure and technology. In urban contexts, desalination, water-mining and the importation of blue and green water have introduced new possibilities developing water use, and arguably have brought with them new interpretations of waste.¹¹² As the teachings of the Qur'an are believed to be timeless, Islamic scholars have gone to work to try and describe modern development in Islamic terms.

The key discussion here, for the purposes of understanding the Omani water ethic, is the way in which increased water use in urban environments has been represented as a symbol of paradise. Quite simply, within Islamic development, the greatest achievement of human civilization would be the recreation of heaven on earth. What is more, as the caretakers of the earth, the holy text affirms the mandate that humans are responsible for improving the environment and seeking to recreate heaven on earth.¹¹³ In Islam, paradise is depicted as a lush oasis where water is plentiful; a gift from God to his people. For Muslim populations around the world, the beautiful waters and gardens of paradise symbolize

¹¹² Allan, *The Middle East Water Question : Hydropolitics and the Global Economy*; Hawkins, *The Ethics of Waste: How we Relate to Rubbish*.

¹¹³ Attilio Petruccioli, "The Islamic Garden as Metaphor for Paradise," in *Islam and Ecology: A Bestowed Trust*, eds. Richard Foltz, Frederick M. Denny and Azizan Baharduddin (Cambridge MA: Harvard University Press, 2003).

righteousness and the mercy of *Allah*.¹¹⁴ This connection between gardens and paradise is so complete, that the common word for garden in Arabic (*janna*) is synonymous with paradise.¹¹⁵ Extrapolating on the notion that Islamic development seeks to create paradise, water then becomes a key resource by which Islamic societies can pursue their heavenly goals.

Within the related disciplines of history, art history, architecture and urban planning, the longstanding trend of Islamic garden building has become a recent topic of discussion. For centuries, Qur'annic literature has been used to encourage "beautification" of the urban environment.¹¹⁶ In the Islamic context, beautification does not seek to present 'nature in its' virgin form' but instead is driven by the goal to present nature in its 'perfect' form.¹¹⁷ Many of the gardens built by Islamic societies, such as those of the Alhambra in Spain or the gardens and reflection pools of the Taj Mahal, are marvels of engineering and art that continue to inspire travelers with a glimpse of Qur'annic paradise.¹¹⁸ The creation of lush greenspaces in the image of Eden weighs heavily on the symbolic nature of environmental ethics, because it legitimates the use of massive amounts of water necessary for the creation and maintenance of gardens in arid environments.

¹¹⁴ De Chatel, *Water Sheikhs and Dam Builders*, 276.

¹¹⁵ James L. Wescoat Jr., "From the Gardens of the Qur'an to the "Gardens" of Lahore," in *Islam and Ecology: A Bestowed Trust*, eds. Richard Foltz, Frederick M. Denny and Azizan Baharduddin (Cambridge MA: Harvard University Press, 2003).

¹¹⁶ Petruccioli, *The Islamic Garden as Metaphor for Paradise*; Burmil, Daniel and Hetherington, *Human Values and Perceptions of Water in Arid Landscapes*, 99-109.

¹¹⁷ Petruccioli, *The Islamic Garden as Metaphor for Paradise*.

¹¹⁸ De Chatel, *Water Sheikhs and Dam Builders*.



Figure 9: Alhambra Gardens, Grenada, Spain.

Using water for the purpose of beautification has been historically viewed as transcendent in Arab and Islamic civilizations. This concept gained attention in 2009, after the conference “Rivers of Paradise.”¹¹⁹ Through the discipline of Art History, we now understand that the more gardens that a city could boast, the more respect and prestige it was due.¹²⁰ As an aesthetic accomplishment, dynasties of Egyptian, Safavid, Persian, Mughal and Saudi Kings endeavored to build increasingly lavish gardens, each with more fountains and streams than the one that came before.¹²¹ Early travelers such as Ibn Hawqal marveled at the grandeur of the gardens in the capital cities of the early Islamic empires, describing the

¹¹⁹ Sheila Blair, Jonathan Bloom and Hamad bin Khalifa Symposium on Islamic Art and Culture, "Rivers of Paradise : Water in Islamic Art and Culture" Yale University Press ; In association with Qatar Foundation ; Virginia Commonwealth University ; Virginia Commonwealth University School of the Arts in Qatar, 2009).

¹²⁰ Carole Hillenbrand, "Gardens Beneath which Rivers Flow: The Significance of Water in Classical Islamic Culture," in *Rivers of Paradise: Water in Islamic Art and Culture*, eds. Sheila Blair and Jonathan Bloom (New Haven CT: Yale University Press, 2009) 25.

¹²¹ Walter Denny, "Art, Infrastructure and Devotion: Ottoman Water Architecture," in *Rivers of Paradise: Water in Islamic Art and Culture*, eds. Sheila Blair and Jonathan Bloom (New Haven CT: Yale University Press, 2009).

various water features as a credit to the society's development.¹²² This symbol of development remains today and carries considerable weight in the water management strategies of the modern Arab states.

As Blair and Bloom discuss, the creation of beautiful public gardens by religious and political leaders has also taken on domestic significance as the public green spaces symbolize the benevolence of a ruler to their citizens.¹²³ By giving their people access to aesthetically pleasing environments, a leader of political Islam takes on some of the metaphorical attributes of *Allah*, a noble and caring being, gifting water to his people. Because having more gardens renders a city or country more spiritual, more beautiful, more advanced and more modern, it is not surprising that Islamic rulers today would continue to create paradise on earth, both as a way to fulfill *Allah's* will and as a way of projecting modern development.

Spurred by changes in substance and symbol, the globalizing forces of both Western and Islamic symbols, rituals and worldviews have brought new ideas of development, prestige and identity to the urban Omani water ethic. The following methodology describes the application of this analytical framework, in order to understand how this newer ethic is reconciled with conservative tradition.

¹²² Blair, Bloom and Hamad bin Khalifa Symposium on Islamic Art and Culture, *Rivers of Paradise : Water in Islamic Art and Culture*; Petruccioli, *The Islamic Garden as Metaphor for Paradise*; Burmil, Daniel and Hetherington, *Human Values and Perceptions of Water in Arid Landscapes*, 99-109.

¹²³ Blair, Bloom and Hamad bin Khalifa Symposium on Islamic Art and Culture, *Rivers of Paradise : Water in Islamic Art and Culture*.

Methodology

To analyze perceptions of resource use, it is valuable to engage a variety of interdisciplinary sources of information. In order to explain the rapid oscillation between the conservative and consumptive ethic, I synthesize both quantitative and qualitative data sets. The following sources of data provide a hybrid epistemology, with each type of analysis illuminating the shifting relationship between substance and symbol in settled and unsettled culture.

The majority of the data that is analyzed in the following chapters comes from interview transcripts from first hand fieldwork conducted in December 2012. This fieldwork was approved by the University of Washington's Human Subjects Division, and qualified as "exempt" from review, due to the fact that no direct identifiers were collected from interviewees.¹²⁴ Over the course of two weeks, I stayed in Muscat, the capital of Oman, and travelled to two towns in the countryside to conduct interviews. In the capital, I was hosted by the Water Research Center at Sultan Qaboos University (SQU), which provided me with generous support, library access, and the statements of support that I required to get an audience with officials from the Omani government. As the interviews were conducted in Arabic, several undergraduate students in the English Language Department at SQU also supported me with translation and conducting the interviews.

In addition to my interviews with government officials, I was able to conduct 17 interviews with regular citizens to hear their candid impressions on the ethics of water use. In an attempt to get a balanced view from the population, I interviewed a breadth of demographics, including a range of age groups (from 18-52 years old), gender (11 female and

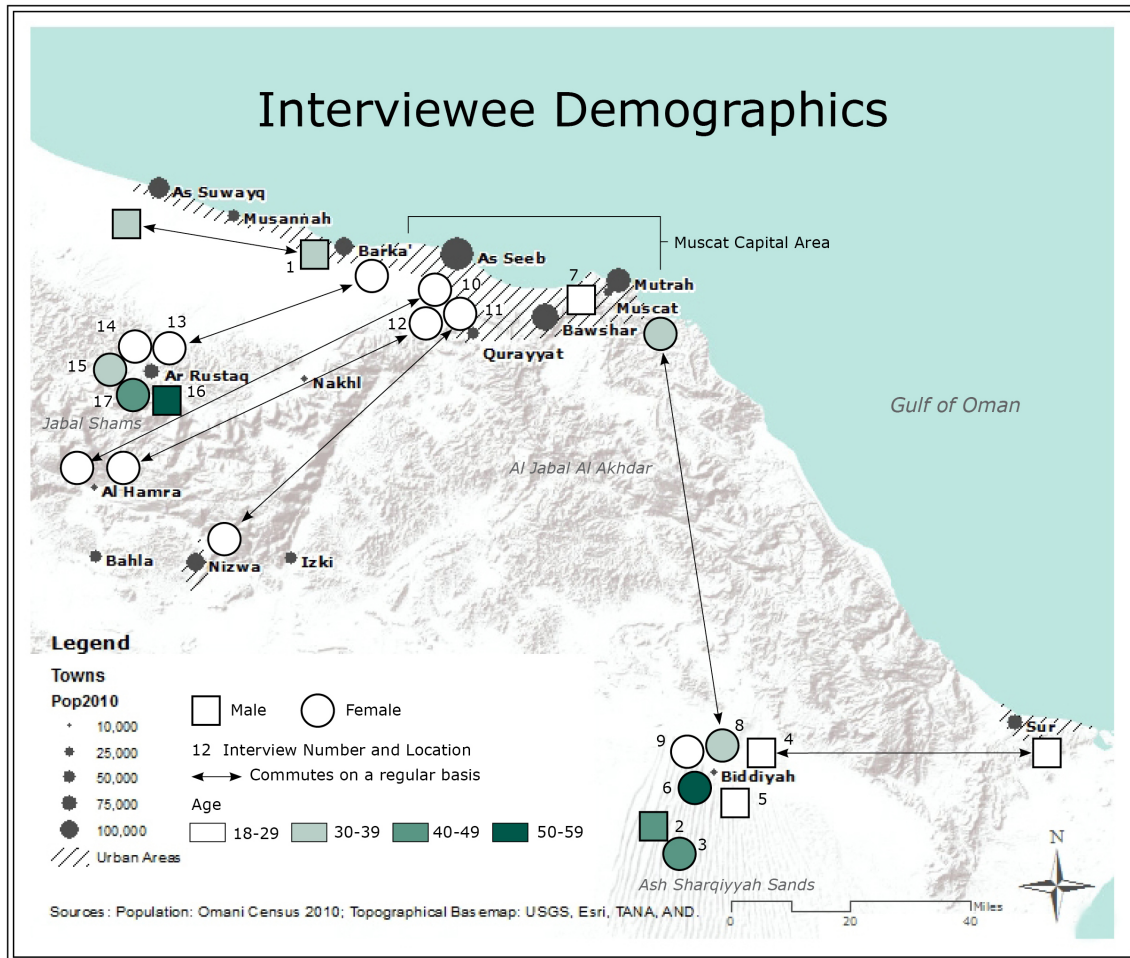
¹²⁴ For more information on IRB status, please see the appendix.

six male), urban and rural gradients (7 living in the capital area and 10 in small towns), level of education (8 claiming “None-highschool” and 10 with advanced degrees), whether they commute between the capital area and a village in the interior on a regular basis etc. While the range of interviewees leads me to believe that the viewpoints shared were fairly representative of the population, this was a sample of convenience, and the results I present are not the product of a statistically randomized population sample and is thus subject to some selection bias. I should note that given the particularities of Omani society, it would be extraordinarily difficult to obtain a randomized sample, due to cultural inhibitions against talking with people who are not among your acquaintances. In order to get sincere answers from my interviewees, it was necessary to solicit participation from within existing friendship and trust networks.

Map 2 summarizes this sample, paying special attention to the spatial distribution of the participants. It is worthwhile to note a few broad trends: the commuters were predominantly young professionals and students from the post-Renaissance generations, while the non-commuters were largely part of the pre-renaissance generation. The distribution of interviews does somewhat reflect the distribution of demographics when compared with recent statistical data.¹²⁵ The one exception here is the shortage of male participants, notably giving the female perception of water ethics a slight bias in the data.¹²⁶ By discussing demographic trends, I only highlight relationships in the data that are intriguing, and I do not at all imply that these are accurate trends for the population at large.

¹²⁵ Ministry of Information, *Statistical Year Book 2012* (Muscat, Oman: Government of Oman,[2012]).

¹²⁶ As a female researcher, it was difficult to arrange interviews with male participants in a way that would be culturally appropriate. If I were to repeat this study, I would endeavor to arrange to have more male participants to match up with the normal population distribution.



Map 2: Interviewee Demographics

The interview questions focused on the participants' perceptions of ethical and non-ethical water use, their perceptions of scarcity and what they view as symbols of development. The questions also solicited information on the communities that provide cultural contexts for the participants, making it possible to analyze ethics in relation to settled or unsettled context. While the interviews were semi-structured, the main questions for all of these demographics were the same, allowing for a cross analysis between urban/rural and pre/post-Renaissance demographics. The interviews highlight certain situations in which conservative and consumptive ethics of water use are applied. They also

show how the two ethics may not be as mutually exclusive as they seem, given the changing symbolism attached to water. Here are some types of questions that were asked during each interview:¹²⁷

- What do you know about traditional water systems?
- What do you know about the ideas of water governance in Islam?
- Are some types of water use ethical while others are unethical/*haram*? Where do those rules apply?
- Do you think these norms of water use are changing in rural areas? Why/why not?
- Do relationships between people matter when using/distributing water?
- Are there differences in urban and rural community?
- Do you worry about water scarcity?
- Who's job is it to provide/distribute water?
- What does water symbolize in Omani culture?
- What does a garden symbolize?

Interviewees provided many personal anecdotes to these questions, which are qualitatively analyzed throughout this work to illustrate the importance of different symbols for participants in culturally settled and unsettled environments. The interview data, however is also subject to quantitative and geographic analysis.

Quantitative Analysis

For this project, I used two different analytical software packages: Atlas TI and ArcGIS. Atlas TI is a program that allows one to upload many different types of media (interview transcripts, photos, video etc.) and “code” or tag sections of each primary data document with different key words. These codes can then be manipulated (combined, filtered, searched etc.) so that you can locate relevant information from across many primary documents that relate to the same idea. This was very useful as I could create codes that related to the specific trends in the data (both anticipated and emergent) and then analyze all

¹²⁷ For the complete list of interview questions, please see the appendix.

of the interviews more systematically based on the demographics of the participants, key words and ideas.

The codes used for this data were both descriptive and analytical. For example, each time an interviewee described their experience using the *falaj* system or public wells, the quotation was coded as “Traditional Resources.” Searching this code in the software would then produce a list of relevant quotations from all of the interviews. Analytical codes were even more important as they highlighted conceptual trends. For example, the codes “Conservation = Ethical” and “Conservation = Thrift” referred to two prevalent explanations for why Omanis would want to limit their water use. Furthermore, a combined query, such as searching “Traditional Resources” and “Conservation = Ethical” simultaneously would produce a list of quotes that showed ethical precepts as the limiting factor on consumption of traditional resources. This output could then be analyzed in relation to demographics and geography.

ArcGIS, a geographic information system (GIS) software, is currently the industry standard in digital geographical analysis and cartography. I mapped the data to the geography of Oman to be able to show patterns in people’s perceptions of water use, relative to different locations or water sources. For specific yes or no questions, I was able to display what different participants thought about how they should use water in different contexts. The maps clearly visualize the differences between how people think about water use in rural and urban areas.

Using Atlas TI and ArcGIS to analyze the interview data, I extracted quantitative components from this largely qualitative dataset. Once all the interviews were coded in Atlas TI, the program displayed the number of interviewees that used a particular word or shared certain beliefs. Using ArcGIS to map these interview results shows the spatial distribution of

certain answers. These spatial analyses give good quantitative evidence and visual representations of ethical code switching, as many interviewees had different answers when asked about water use in relation to a rural or urban location.

These maps also integrate the other statistical data sources utilized throughout this thesis. This data comes largely from the statistical yearbooks and several general censuses that have been published by the Omani Government since 1970.¹²⁸ Much of this data exists only in print form, which I copied from the resources at the center for Omani Studies at Sultan Qaboos University. I then compiled this data into my own spreadsheets which I exported into ArcGIS for analysis. Thus, I believe that my data on population, water use trends and desalination are accurate and identical to the official information produced by the Omani government.

The data pointed to three large factors shaping consumption: changing between traditional and modern sources of substance, commuting between different community contexts and the influence of symbols of national development and history. The following chapters each begin by presenting some of the strongest quantitative trends in the interview data and then explaining these trends with anecdotal evidence relating to the pressures of substance and symbol in settled and unsettled contexts.

¹²⁸ Ibid.; Ministry of Information, *Oman General Census 2010* (Muscat, Oman: Government of Oman,[2010]); Ministry of Information, *Statistical Year Book 2004* (Muscat, Oman: Government of Oman,[2004]); Ministry of Information, *Oman General Census 1993* (Muscat, Oman: Government of Oman,[1993]); Ministry of Information, *Statistical Year Book 1983* (Muscat, Oman: Government of Oman,[1983]); Ministry of Information, *Statistical Year Book 1972* (Muscat, Oman: Government of Oman,[1972]).

Part III: Data Analysis and Conclusions

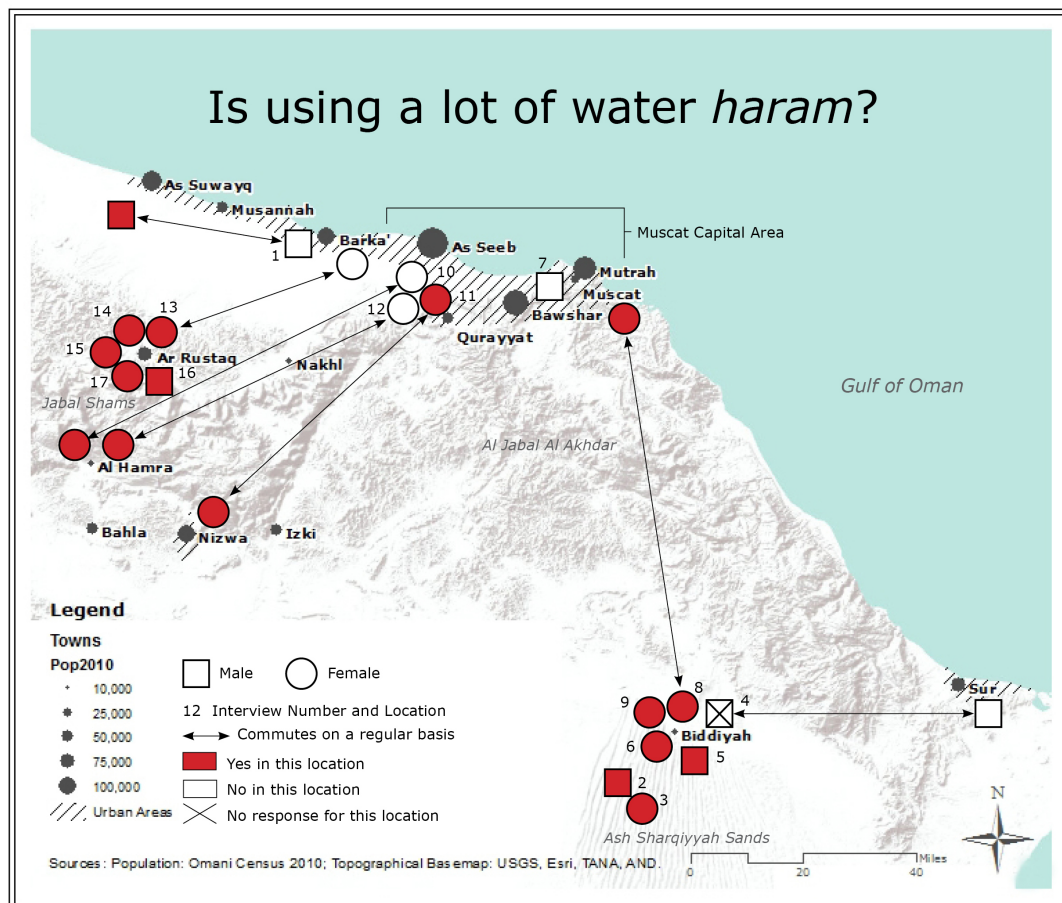
Changing Sources of Substance

Shifting between two different water sources—the rural and the urban—has a large impact on how Omanis view ethical water use. Of the 17 interviewees, 14 indicated in their answers that the transition from using traditional water sources to urban water sources—and piped, desalinated water in particular—leads to higher levels of consumption. This is one of the most striking trends in the data, and suggests that most Omanis are quite aware of the different origins of the water they use, and that they treat these substances differently.

During the interviews, many participants drew a clear distinction between natural water resources and desalinated sea water. This was also usually a distinction between traditional water sources and modern water sources, which were discussed as completely different substances. While the analytical framework in this thesis separates substance and symbol for the ease of analysis, even something as tangible as a natural spring or new technology can take on many important symbols, which in turn influence peoples' ethics.

An emergent trend in the data that represents this quite clearly is the use of the word “*haram*” in relation to the ethics surrounding traditional and modern water sources. Overall, 15 out of 17 of the interviewees used the word *haram* to describe wasting or misusing water. *Haram* literally means “morally reprehensible,” “forbidden” or “to break the law” and is the term used to signify sinful acts in Islam. The *Qur'annic shari'a* expressly states that wasting water or using water improperly is a serious sin. All of the participants were Muslim, and the fact that so many of them independently chose to use this specific word shows the level to which religion is involved in their perception of ethical water use.

However, the word *haram* did not apply to all contexts. In fact, six out of eight commuting Omanis did not think that using lots of water in the city was *haram* while they simultaneously gave this moral connotation to wasting water in rural areas. Map 3 illustrates ethical code shifting in relation to substance.



Map 3: Symbolic Rhetoric Surrounding Different Water Sources

To explain why using a lot of water in rural areas was *haram* and not *haram* in the city, the interviewees usually said that natural water was precious.¹²⁹ So, what makes some water precious and other water just a regular consumable? As described in the review of Tvedt and Oestigaard’s work, tangible sources of water and the technology used to distribute it can provide a “substance” based explanation for setting cultural norms. Adopting a new type of

¹²⁹ Interview 1, 10, 11, 12.

water resource changes the context of water use and produces an “unsettling” effect on culture. Because “settled” cultural tools do not necessarily apply to the new resource, individuals must expand their cultural tool kit and construct new ethical strategies of action. Furthermore, switching back and forth between multiple substances requires that individuals apply different tools from their cultural tool kits in order to navigate emerging social norms. This chapter focuses on how changes in “substance” provide a partial explanation for ethical code switching.

Traditional Cultural Tools for Managing Natural Water

Sources

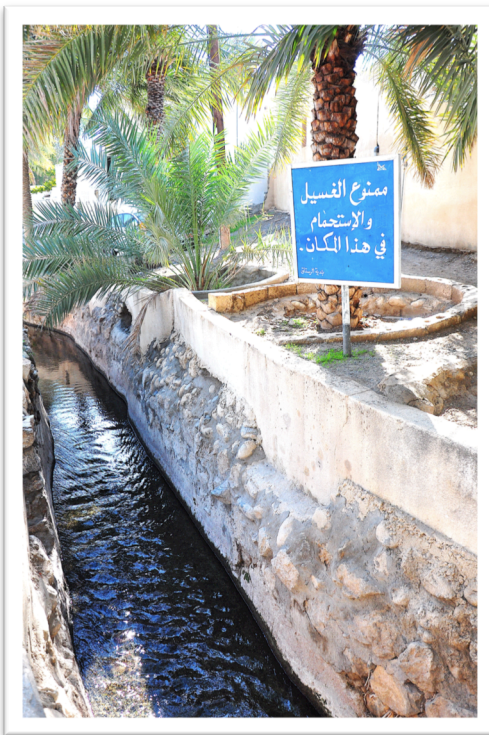
The traditional sources of water in Oman, as described in the introduction of this thesis, play a major role in shaping the environmental ethics of Omanis. First, the stories Omanis possess about the history of specific water resources in traditional communities is an important tool used to incentivize conservation. Secondly, the physical existence and maintenance of common property resources requires a very high level of community involvement. Across generations, the interview data clearly indicates that the participatory actions required by the *falaj* system were key to shaping conservative perceptions of water use. The *falaj* system then produces a communitarian worldview and ritual interactions that are important cultural tools.

Interviewees living in rural areas cited their interaction with a particular local water source as having a very strong impact on their sense of conservation. Nearly all of the individuals living in the countryside told stories during their interviews about a specific *falaj* or well, illustrating their personal connection and experience with the resource. Playing in

the family's *falaj* channel as a child, remembering the fluctuation of water availability during years of drought and walking to the origin of a spring to collect clean drinking water were common themes in many interviews.¹³⁰

The daily contact with the physical resource and the special importance of place and family history create stories that laud careful stewardship of water resources, and these stories then influence the rural water ethic. One student from Sultan Qaboos University told me some of these stories. She explained how *Allah* told the *djinn* (spirits) to help David build the *aflaj*, and the cautionary tales her grandparents told about how a witch would steal small children away who would waste the water from the nearby spring.¹³¹ She also added stories from her own experiences. In one example, she said,

Figure 10: "Washing or bathing in this place prohibited."



"When we were little we were so happy when our falaj would be full with water. When it was our turn we would go and play and wash in it...then when I was at Ain al Kasfa [the mother spring], there was a strange woman, not from here. She was using soap to wash her pots and clothes in the spring. An old woman stopped and yelled at her!"¹³²

Nowadays, when she visits her family over the weekend, these stories and memories detail her perception of substance and her personal narratives create cultural tools that she can apply in familiar situations.

A personal connection to water has an incredibly important effect by simply increasing a concrete understanding about the depletion of the

¹³⁰ Interviews 1, 2, 8, 9, 10, 11, 12, 14, 16.

¹³¹ Interview 13.

¹³² Interview 13.

resource, and the need for careful stewardship. Most rural-dwelling Omanis observe the source of their water everyday and are sensitive to the variations in the water landscape. They are able to look at the level of the water in the *falaj* and know if their village is facing scarcity or abundance. They are also able to interact with the technology and local governmental structures that bring the water directly to them. Relative to those in the city, people in the interior have a lot of control over their water.

This control is not only over their own water use, but also over the use of others. As in the example above where the old woman yelled at the stranger polluting the water, the system allows for a high level of oversight between community members. By publically chastising individuals who do not conserve water, everyone in the community participates in reinforcing the acceptable strategies of action. Through this interactive process, the norms and rituals of participation necessitated by the *falaj* system make rural communities cautious about wasting water, requiring individuals to adhere to a conservative water ethic. Because of the personal effort put into maintaining such a system and the memories created by caring for a traditional substance, the water in rural areas becomes precious.

In addition, the traditional and natural water sources are sacred. The water that springs from the ground or falls from the sky has divine origin and is a gift from Allah to humankind. One interviewee illustrated this point, saying,

*“Allah decides where springs are and he gives them to his people... Allah tells us that he has made from water every living thing”*¹³³

The final phrase of this excerpt is *Sura* 21:30 from the Holy *Qur’an*. This common *sura* was a refrain that I often heard when individuals were emphasizing that water was a gift. In short, it means that water is life, and that life itself is a gift from god. Over half of the interviewees

¹³³ Interview 5.

recited this exact verse without prompt, showing that this phrase is common knowledge across Omanis of different generations and locations of residence. More importantly, it is a common tool in their cultural toolkit.

Thinking about natural water as a gift is important because it instantly makes it sacred. This is not only religious logic. In general one is more likely to savor and preserve a gift from a loved one, rather than an item purchased or made by oneself. The item gifted becomes associated with the generosity of the giver and places a certain responsibility on the receiver to care for the gift.

Thus, the perception of natural water as a gift from *Allah* goes a long way to showing how symbol interacts with substance and how the settled religious cultures in rural areas help maintain the traditional water ethic. The *Qur'an* explicitly cautions man against abuse this gift, and Omanis take this sense of stewardship very seriously, endeavoring to preserve these sacred resources accordingly.

The Unsettled Relationship Between Culture and Modern Water

Taken out of context, the narrative, ritual and spiritual tools that govern rural water use do not apply to new sources of water. Over the past 30 years, the number of Omanis that have installed Western-style plumbing has dramatically increased. In fact, in the 20 years between 1990 and 2010 (only one generation) the number of domestic pipeline connections in Muscat has increased sevenfold from 37,000 to 142,000.¹³⁴ The governates surrounding Muscat have experienced an even faster increase, going from 10,000 to 92,000 pipeline

¹³⁴ Ministry of National Economy, "Electricity and Water," in *Statistical Yearbook 2012*, Vol. 40 (Muscat, Oman: National Center for Statistics and Information, 2013).

connections in the same amount of time, with these connections mirroring the trend of urbanization.¹³⁵

Piped water has an important effect as it distances the user from the source of their water. Piped water is a magical thing—with the slightest turn of the faucet water comes spouting out in a way that is predictable and controllable. Yet, instead of giving more control to the user, these new technologies create a substance that is much more challenging for individuals to manage.

All urban houses with a water connection have a meter that is managed by the government. This has several implications. First, Omanis are still aware of how much water they are individually consuming, however they have no tangible concept of how much water there is to start. As far as the urban interview subjects in this study were concerned, there was plenty of water in Muscat. When I asked a man living in Muscat if he tried to save water there he replied,

“No.” He laughed at my question. “A family of 5 people uses a lot of water. You know how much you use based on what you pay. Spending 40 Rials per month [80 USD] means you use a lot of water. Actually if you spend more than 25 Rials per month means that you’ve used a lot... We buy our water from a tanker. We buy 600 gallons for 40 Rials. But there is no difference in my life when I pay more. It is easy to get water.”¹³⁶

Today, there is no qualm over having water piped directly into your personal house, but this subtle convenience has had a large unintended consequence on culture and water use. When water is collected from a public well or *falaj*, it is clearly a shared, community good. However bringing water into a personal space decreases the individual’s interest in conservation of the community resource. This personalization changes the subconscious equation for individual consumption from: “how much can I consume to be fair to the rest

¹³⁵ Ibid.

¹³⁶ Interview 7.

of the community?” to “how much water can I pay for?”¹³⁷ While personal drinking water has always been a right, city dwelling Omanis now have rights to new water uses such as flush toilets, machine washers and grass sprinklers, so long as they can pay for their use.¹³⁸ Water becomes a private commodity and consumer good simply by moving the access from a public place to a private one. Removed from small communities and in the comfort of their own homes, Omanis in the city no longer have the tangible sense that they are sharing a resource.

Desalination is the main process by which water is being individualized or personalized. Oman has 32 desalination plants, the largest few of them producing upwards of 40 million gallons of fresh water daily.¹³⁹ Most people in cities purchase and consume desalinated water and for many it appears that this technology can produce an endless supply. Numerous interviewees justified using more water in the city because in their perception the water comes from the Indian Ocean, a seemingly inexhaustible resource. One student in her early 20s remarked,

*“In Muscat, I don't care. It is from the sea – it is free. Sometimes I just want a long shower.”*¹⁴⁰
Another student concurred in her interview, saying,

*“In cities [water] comes from the sea, so it is not a problem to use more.”*¹⁴¹

Almost all of the water consumed in the urban capital is produced by desalination, which means it is modern water. No longer a natural resource, this water is man made and is no longer perceived as a gift from Allah. In short, water that comes from a desalination plant or a mechanized well is subjected to an entirely different set of ethics.

¹³⁷ Mandana E. Limbert, "The Senses of Water in an Omani Town," *Social Text* 19, no. 3 (2001b) 49-50.

¹³⁸ Mandana E. Limbert, *In the Time of Oil: Piety, Memory, and Social Life in an Omani Town*. (Stanford, Calif.: Stanford University Press, 2010), 124.

¹³⁹ Paul McLoughlin, "Water Sources." *Y-Magazine*. (Issue 176, 2011), 23.

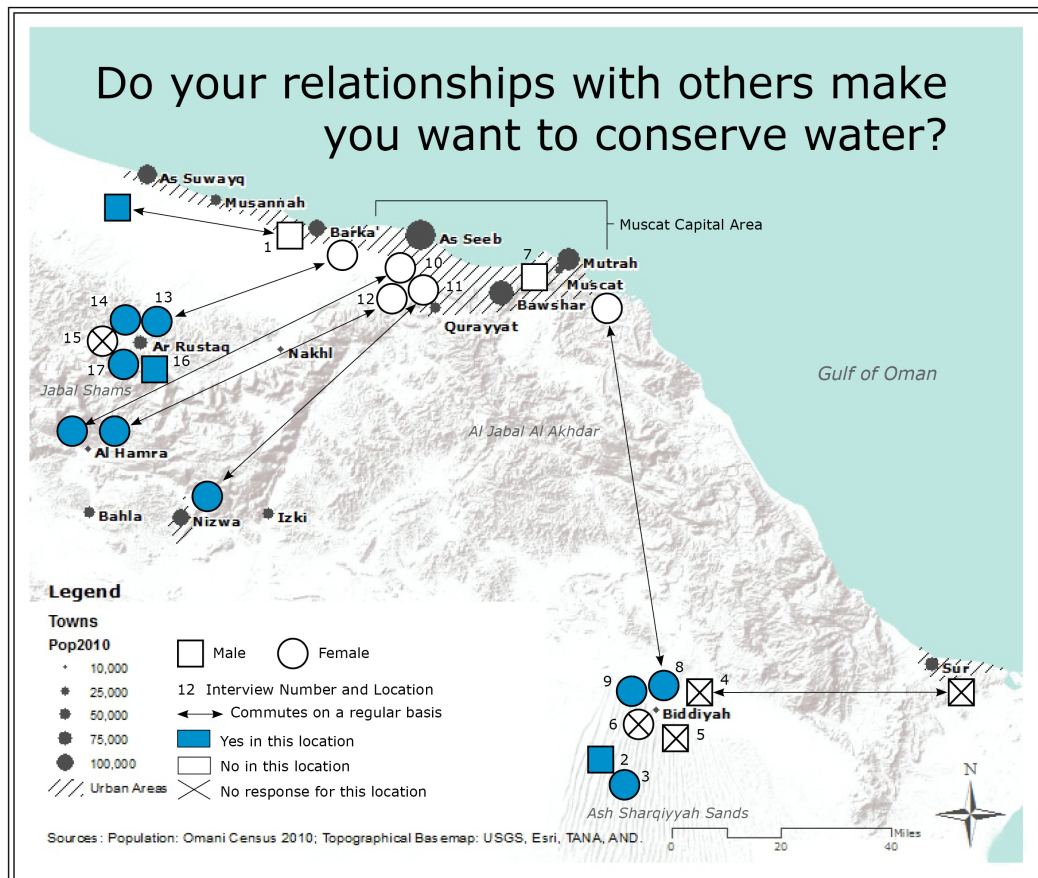
¹⁴⁰ Interview 12.

¹⁴¹ Interview 9.

When we analyze the Omani case study, it is apparent that people do not make rational choices about their water use based solely on cost-minimizing logic. Instead, the specific cultural attributes attached to a particular water source matters a great deal. The moral imperative to conserve water is not tied to convenience or perceived resource wealth, but rather to the user's knowledge and symbolic relationship to the water source. In settled cultural contexts, the cultural concept of natural water as a sacred gift creates an intrinsic desire to save it, and Omanis that are aware of the source of their water are more likely to be conservative, regardless of whether they get their water from a tap in their house or from a public source. For individuals living in unsettled urban environments, the new source of modern water comes free of any cultural or symbolic association, removing any relationship to the traditional water ethic.

Navigating Multiple Community Structures

Outside of the physical landscape of water, the social landscape also determines ethical water use. In each interview I asked simple question: Does your sense of community differ between your village and the city? Not surprisingly most of the interviewees answered yes. I followed this question, asking, “Do your relationships with others influence your water use?” The responses to this question followed a geographical distribution that was strikingly similar to the belief that using lots of water is *haram*.



Map 4: The Importance of Community for Conservation

Again, the urban-rural divide is apparent, and this time all of the commuting participants noted that their relationships with others in the city do not play a role in how much water they use, whereas they do pay attention to this pressure in the countryside. Social relationships must then produce certain types of rituals and symbols that contextualize a water ethic.

As discussed in the literature on common property resource management, personal relationships are very important in creating incentives for people to conserve water. As one interviewee said,

“Because wasting is haram, in the country, people’s relationships make them want to save water. You can’t compare this with the city. It is too different. There the parents just pay for everything. There are no pressures from relationships.”¹⁴²

This quote illuminates a distinction between the social dynamics of rural and urban areas that have an enormous effect on environmental ethics. In other words, perception of substance and symbol are greatly affected by community context. In Oman, the rural communities are tightly knit social groups, sharing kinship, tradition, religion and history. In urban areas, community is much more fragmented with relatively few ties between individuals. These contrasting contexts of “deep” and “shallow” community present very different pressures in terms of substance and symbol, creating the need for ethical code switching.

Deep Community

In interviews with individuals from the pre-Renaissance generations, virtually every anecdote described the close relationships between individuals that exist in rural areas. Tribal and kinship relations remain very important, and maintaining close friendships is a necessary part of life. One Bedouin man remarked about his friends, saying,

¹⁴² Interview 1.

“We are all like family [in the interior]. We work together. If I get sick, everyone comes and stays with me until I am better. It is not like this in the city.”¹⁴³

Another man, when describing the differences between his life in Muscat and his parents’ lives in the countryside said,

“The old people don't want to move to Muscat. If you piled this table full of money, they would not go. Do you know the reason? It is because they have so many friends. In the interior, the old men and old women can have a good life. In the city it is different. I don't know the person who lives next to me. In my village, my parents know everyone who lives 20 houses away!”¹⁴⁴

These quotes clearly show the importance of relationships in the traditional or settled Omani cultural context. In addition, the stories that interviewees told in order to describe traditional water use almost always included a description of the relationships between the interviewee and other people. One middle-aged man in Ar Rustaq who still uses the *falaj* system commented,

“Twenty years ago, everyone would gather and get water and share news. This made strong relations and cooperation. And if you ever needed anything, your neighbors would help you of course. It used to be that all Omani men would gather together and divide the water, you and your friends would walk along the aflaj and open your channel during your turn. Now only Indian and Bangladeshi workers do this.”¹⁴⁵

Each of these quotes illustrates the social integration and “deep community” of village life in contrast with the trend of increasing atomization in cities. In small towns, everyone has a social role and responsibilities to one another. Family and friends are nearby and neighbors visit each other often. Communities are relatively small and present a situation in which everyone knows everyone else. To offer an anecdote, during one visit with a family in Bidiyyah, my host pointed out the houses of her friends and family as we drove through the village. She knew who lived in every house we passed, even if the inhabitants were not her direct acquaintances.

¹⁴³ Interview 2.

¹⁴⁴ Interview 1.

¹⁴⁵ Interview 16.

Knowing your neighbors and caring about your reputation with them is something that is incredibly important in Oman's settled communities. Honor and respect are paramount, and fostering a good reputation in the community is a cultural requirement. As the young woman from Bidiyyah told me, good relationships between individuals and families create support systems for raising children, marital matchmaking and caring for the elderly.¹⁴⁶

Part of this good reputation comes from the way that individuals and families use water. Religion in particular offers this symbolic pressure as the Prophet Mohammed condemned waste and injustice, creating the *shari'a*, or Islamic law which is still at the heart of water governance.¹⁴⁷ Because of the religious symbols of good and evil attached to traditionally conservative water ethic, individuals and families who use water conscientiously are able to earn social capital. Using only your fair share of the village resource and supporting others who are in need of water is one way that families create bonds of friendship and respect. One interviewee spoke of this trust, saying,

*"...in the past if I needed more water I could just ask my friend if I could have some, and then I could trade or repay him."*¹⁴⁸

The trust that this man had built with his neighbors was part of a common cultural covenant for water (and particularly *aflaj*) governance in Oman called *hima*. Dr. Saif Rashid Al Shaqsi, the CEO of the National Field Research Centre for Environmental Conservation, described *hima* to me in an interview. Dr. Al Shaqsi explained that *hima* is a code for good governance that combines sets of ethical principles, institutional and governmental principles and sustainability principles in creating the traditional culture around water use, with a

¹⁴⁶ Interview 9.

¹⁴⁷ Khawar Khan Chishti, *Fitra: An Islamic Model for Humans and the Environment*, 79.

¹⁴⁸ Interview 16.

particular focus on equitable distribution. Some of the ethical principles that Dr. Al Shaqsi outlines are adapted in the following table.

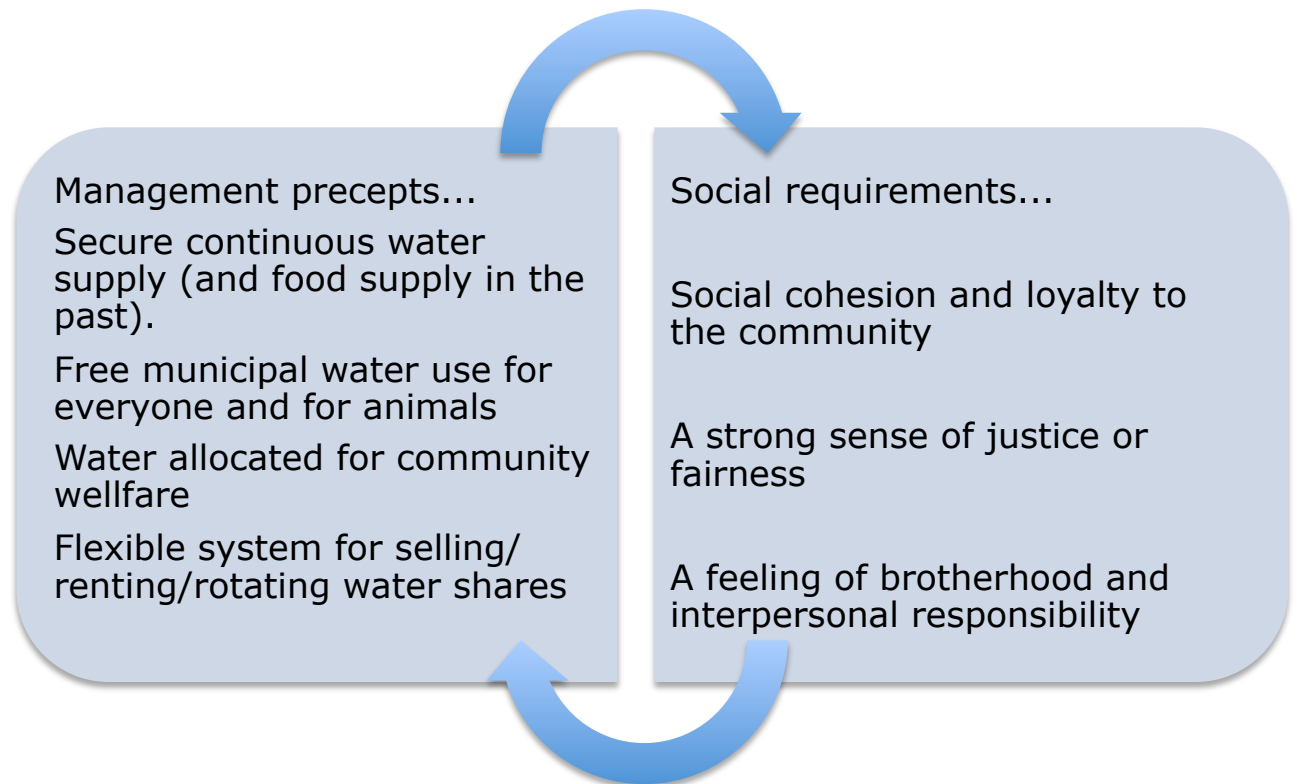


Figure 11: The Ethical Principles of *Hima*¹⁴⁹

We can think of *hima* as the “strategy of action” that Omanis apply in settled cultural contexts. It is also strikingly similar to Ostrom’s precepts for common property resource management, giving evidence to the claim that traditional water management in Oman is in fact an example of a longstanding CPRI.¹⁵⁰ *Hima* combines the physical pressures of limited

¹⁴⁹ This text and diagram have been adapted from Dr. Al Shaqsi’s presentation, “The Presence of HIMA Concept in Afaj System in the Sultanate of Oman.” This presentation includes some of the findings in his forthcoming book on the same subject. I have added the arrows, because I believe that

¹⁵⁰ Ostrom, *Crafting Institutions for Self-Governing Irrigation Systems*.

natural water resources and the symbolic, interpersonal pressures found in the close-knit society of traditional Omani towns. *Hima* is a common concept in Oman and settled communities pass down the knowledge of *hima* using common stories, rituals and other cultural tools from one generation to the next.¹⁵¹

The sense of allegiance to a particular deep community is something that follows an individual, so for most of the Omanis that have moved to urban areas in the past few decades, their sense of responsibility still lies with their traditional community and tribe. Because of this, commuting Omanis still apply the conservative ethics of *hima* when they are acting within the settled social structures of rural Oman.

Shallow Community

During one interview with a female student at Sultan Qaboos University, I asked her if she cared about conserving water at her family's rural home. She replied,

“At home I take showers quickly sometimes. We also care about everyone. We know other people, our family our friends. This is something from inside us that tells us to stop.”¹⁵²

For this young woman, her intrinsic desire to save water was based on a sense of responsibility to her family and friends. I later asked her if she worried about wasting water during the school week when she lives in the dorms. In response she said,

“I don't care in Muscat... Water is free in Sultan Qaboos University.”¹⁵³

Clearly, the precepts of *hima* did not apply in the big city.

¹⁵¹ Interview 3.

¹⁵² Interview 10.

¹⁵³ Interview 10.

In Muscat, the rapid urbanization (and suburbanization) that has drawn people from all parts of Oman has created a very different type of society. Notably, there is a distinct sense of individualism that is reminiscent of the culture in most urban parts of the United States. Families in Muscat often live in single-family houses and flats in contrast to the large compounds that house extended families in the countryside. In the city, adults work outside of the home and usually outside of their immediate neighborhood. In general, each nuclear family is much more disconnected from the networks of family and friends than they would be in their rural hometowns. The lack of these social structures has a further unsettling effect, taking away any social context that would promote resource conservation. Thus, “shallow” community fails to enforce traditional norms for water use.

In urban settings there are also changes within the family structure that lead to a sense of individualism and a relaxation of the interpersonal codes of conduct found in deep community. The greatest of these effects are the generational and gender divides.

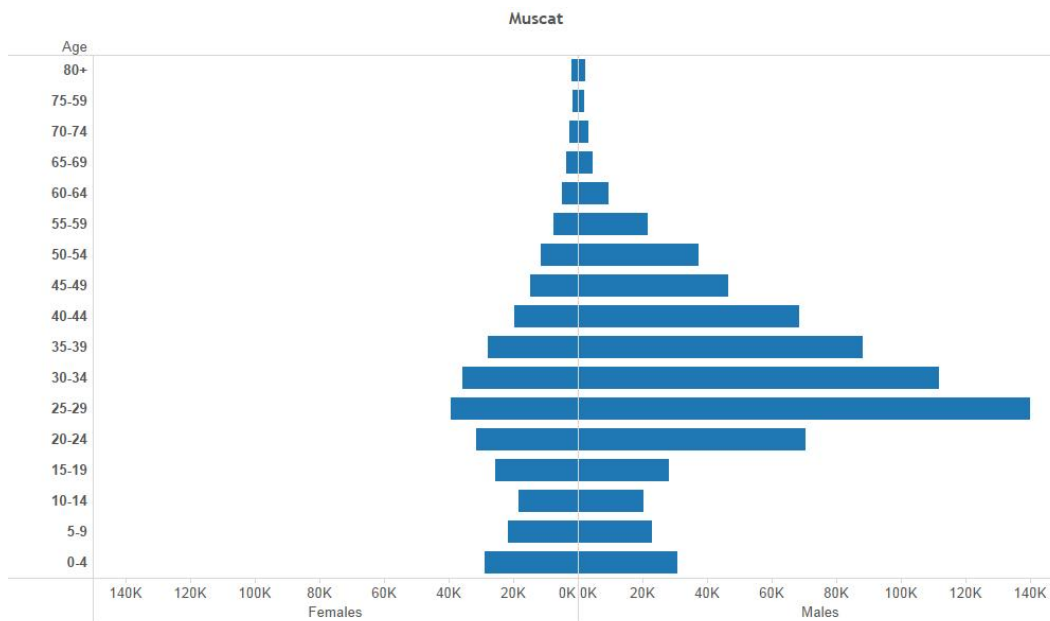


Figure 12: Population Pyramid for Muscat Governate. The city inhabitants are largely early and mid-career professionals, who live in Muscat without their extended families. The extreme imbalance presented here is due

to a. the fact that there are more male professionals than female and b. the large numbers of immigrant laborers who travel to Oman without their families. (2012 Statistical Yearbook)

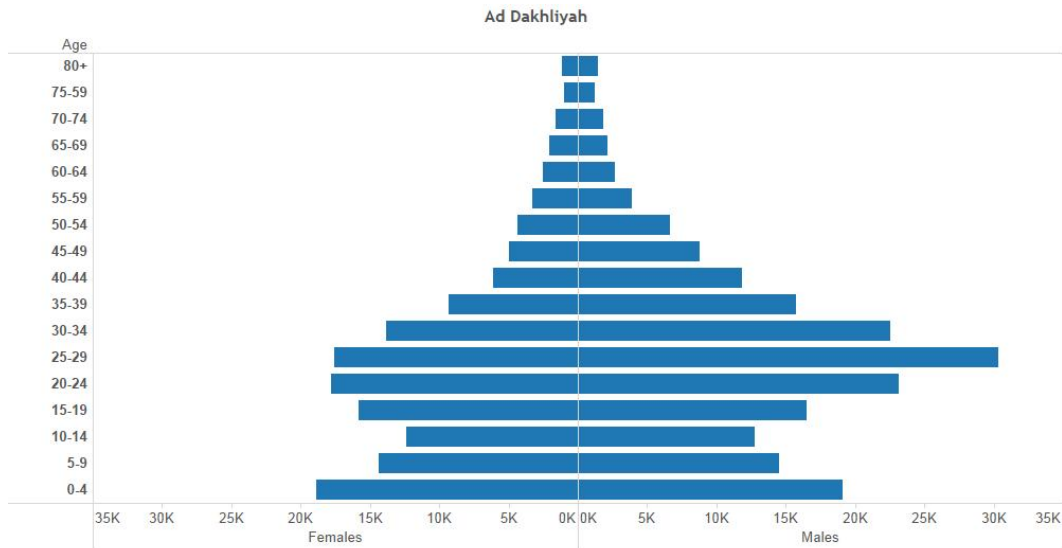


Figure 13: Population Pyramid for Ad Dakhliyah Governate. Ad Dakhliya is The majority of the population in this Governate live in rural villages where there is a greater gender and age balance. This balance promotes passing down cultural tools such as oral histories and rituals.

Where children in the country are surrounded by elders—grandparents, aunts and uncles and family friends—young people live fairly independently in Muscat. As one interviewee noted,

*“When we were young we were scolded. I am more careful around my parents than when I am alone. It is important not to waste water... mother would be very stern. But in the cities, the problem is that the parents don’t teach their children.”*¹⁵⁴

The generational divide in Muscat is something that has expanded the possible strategies for action in relation to water use. Young people in particular are not being watched by their parents, and in general individuals do not feel pressured by the community around them. Because of the changes in substance which make water use much more private in the city, it also removes the parental oversight provided by deep community that would traditionally monitor and evaluate behavior.

¹⁵⁴ Interview 9.

One interviewee, a father of seven in his mid-thirties discussed the generational divide. He told me how he would get water from the communal wells with his grandparents and spend long hours with them at the nearby *wadi*. By contrast, he said that in Muscat his children do not care—there is a water meter in their house and every month he pays for what has been used.

*“I will not lie to you. There is a big problem because many young people, especially boys, do not sit with their parents. Maybe for one hour for lunch on the weekend and they don’t talk about anything. They just sleep and eat lunch and then play football and have dinner with friends and come home to sleep. They do not learn from their parents.”*¹⁵⁵

When I asked another interviewee, a woman from the Ash Sharqiyyah Sands, how she taught her grandchildren to save water, she responded in frustration.

*“The children used to listen...We tell them now but they don’t hear us.”*¹⁵⁶

Without the traditional tools and firsthand experiences, and given the unsettled culture in the city, it is difficult for older relatives to teach the young generations how to use modern water with much authority.

Instead, young urbanites learn about water through a myriad of new sources. Several interviewees described television shows for children that attempt to teach all kinds of traditional morals. Islam and the Omani government were also common sources of information they cited.¹⁵⁷ It should be noted that Sultan Qaboos and the Ministry of Regional Municipalities, Environment and Water Resources (MRMWR) have made a wise and valiant effort to reduce urban demand for water through education. The MRMWR has developed an entire curriculum for school children to teach them conservative ethics for water use. Interestingly, this series of books presents a mix of scenarios and lessons, including rules for using water from the *aflaj* system and how to stop a modern toilet from leaking. The books caution children against everything from increasing their parents’ water

¹⁵⁵ Interview 1.

¹⁵⁶ Interview 6.

¹⁵⁷ Interviews 10, 11, 12, 13.



Figure 14: "The Drought." This image is from a storybook produced by MRMWR to teach urban children the traditional stories about drought that are common in small towns. This series of books also includes stories about managing the falaj system, about sharing water equally from wells, traveling with camel caravans to get water, and other modern topics such as how desalination works etc.

bills by excessively playing with water to the problems of groundwater salinization and desertification caused by over-pumping wells.

This effort to reassert a conservative environmental ethic from the top down was only introduced a few years ago, and as of yet it is hard to tell how effective it will be. One woman, a teacher from Bidiyyah that lives in Muscat, said,

*"I try to teach the children in my class about water. We have posters on the classroom walls, and I tell them that water is precious. I try to teach these morals to them."*¹⁵⁸

¹⁵⁸ Interview 8.

Effectively, this new curriculum is attempting to shape the cultural tool kits of young Omanis to make them more conservative of water. While teaching young people about traditional ethics is a positive step, it may not be enough to counter the effects of shallow community, for as we have seen, the context of resource use is what drives an individual to select certain tools and strategies of action. In shallow community, it may be necessary to invent new forms of interpersonal oversight before individuals voluntarily elect conservative tools and water ethics.

Finally, it would be remiss to overlook the influence that new immigrant populations in Muscat have on creating shallow community. Traditionally, the Omani population has been extremely homogenous, however in the past thirty years an influx of South Asian migrant workers and western ex-pats in Muscat has dramatically expanded diversity. According to Oman's 2012 Statistical Yearbook, foreign residents make up a third of As Seeb, one of the largest residential districts of the capital area.¹⁵⁹ In some specific neighborhoods, the number of foreigners even exceeds the number of Omanis living there.¹⁶⁰

While the influence of increased diversity was scarcely mentioned in the interviews, being around so many people with different habits, worldviews and ethics must certainly have some effect on the unsettled cultural tool kit. Westerners in particular bring their habits of increased water use that have been socially constructed in the wetter climates and social contexts of the United Kingdom or the USA. For young Omanis who observe the often luxurious lifestyles of the western expatriates, it is not surprising that they view water use as less problematic in seeking to emulate an affluent lifestyle.

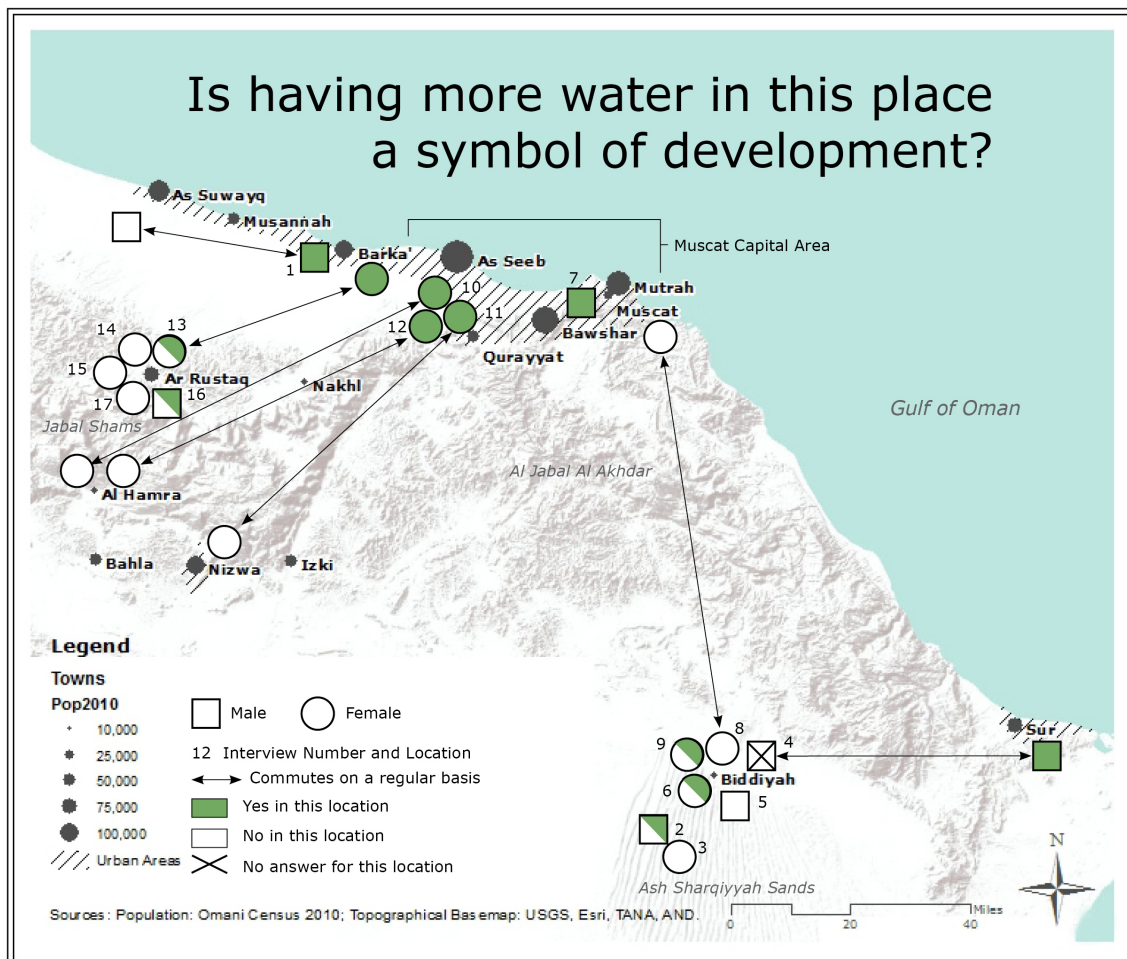
¹⁵⁹ Ministry of Information, Statistical Year Book 2012, Ch. 3.

¹⁶⁰ Ibid.

For each of these reasons—increasing social atomization, the breakdown of traditional teachings, and the influence of increasing diversity—the shallow community in unsettled urban areas has played a major role in removing the pressures of substance and symbol that incentivize conservation.

Symbols of National Development

The final trend in the interview data was the importance that interviewees gave to symbols of national development in relation to water use. On the whole, the interviewees described water use in Muscat as a credit to the nation’s development. This unanticipated trend in the data is fairly strong, with 11 out of 17 interviewees indicating that having and using more water in urban areas was a sign of the country’s progress. Once again, the geography of the water resource in question is an important distinction, as the interviews show that water use is only associated with development in some places and not in others.



Map 5: Water as a Symbol for National Development

While not presenting as sharp of a contrast as some of the other data sets, this map shows how the urban context of the capital area frames water use in relation to dialogues on national development. Again, there is a clear distinction between the concept of using water in the city and in the countryside. The interviewees expressed very clearly that having water in the city was a symbol of wealth and progress, with the adoption of new rituals for water use being perceived as a requirement of the modern lifestyle.¹⁶¹ The introduction of these new symbols of development, both Western and Islamic have created new pressures on Omani society, providing an incentive to consume more water in unsettled contexts.

Symbolic Modern Lifestyles and the Aesthetics of Development

The Omani Renaissance has had another important effect alongside urbanization that has produced culturally “unsettling” effects: nationalism. Before the Renaissance, Oman’s political structure was still organized around tribal rule to a high degree, with individual’s loyalties directed toward their clan rather than their country. However, after opening Oman up to the world in the 1970s, Sultan Qaboos began to emphasize the role of the average citizen in developing their nation.

Energized by the ideals and aspirations of Sultan Qaboos, the Renaissance generation took on the work of modernizing the Sultanate with great vigor and unity. At the time, the leaders in Oman looked to the positive examples set by European nations, and particularly by Britain, as the gold standard for developmental success. By emulating the British infrastructure and technocratic resource management, Oman was able to gain prestige as a nation. As development progressed and the capital of Muscat grew, Omanis

¹⁶¹ Interview 1, 10, 11.

began to define themselves more as citizens of a nation, comparing themselves to other nations around the world and seeking others' approval. In emulating Western models of development, key projects such as providing piped water infrastructure and plumbing remain top priorities.¹⁶²

Many Omanis living in the developing urban centers now consider it backwards to have to leave your home to collect water for cooking, to bathe oneself, or to do the family's washing in public.¹⁶³ Getting water from a *falaj* or a communal well is at the same time respected for its traditional value and yet rejected as a quaint habit of rural life. In the modern city, a family should have clean, white, ceramic flush toilets and showers to use on a daily basis. A household should also have a sink and perhaps even a dishwasher or laundry machine, to rid individuals (and particularly women) of the drudgery of keeping up a home in the traditional way.¹⁶⁴ These amenities are standard in the Global North and introducing these technologies in urban areas raises Oman's status as a developed nation.



Figure 15: A billboard in As Seeb, Muscat advertises “world class sanitary ware.”

¹⁶² Mandana E. Limbert, *In the Time of Oil : Piety, Memory, and Social Life in an Omani Town* (Stanford, Calif.: Stanford University Press, 2010)118.

¹⁶³ Limbert, *The Senses of Water in an Omani Town*, 43.

¹⁶⁴ I should note that I do not criticize Omanis at all for taking on these new habits and amenities as it has in fact given many men and women the extra time needed for pursuing careers or advanced education.

Still today, the focus is on modernizing water use. Desalination is the main technology that Oman has claimed as a symbol of the nation's advance. To the average citizen, turning the ocean into fresh water is nothing short of magic, and the government is the great and powerful Oz. The benevolence and success with which the Qaboos regime has been able to support the population has earned the government great respect in the eyes of Omanis and foreigners alike. This symbolism surrounding national development is possibly one very important tool in Omanis' expanded cultural toolkit that legitimizes the new urban water ethic.

Also, national development is judged by the aesthetics of urban life. A considerable portion of the per capita water consumption in Muscat is not consumed by the individual directly but is used by the Omani government to provide public parks, mosque gardens, and other "beautification" projects. Urban Omanis accept and applaud this use of water and enjoy the benefits of urban greenspaces.¹⁶⁵ Many interviewees even indicated that the government had a responsibility to provide these public gardens. One woman remarked,

*"Of course!!! The government should make public gardens. This shows that the government cares about [its' citizens]."*¹⁶⁶

Many of the interviewees concurred that the government had a responsibility to pursue urban beautification. This sense of responsibility was confirmed in an interview with an anonymous government official from the Muscat Parks and Gardens Department who described the situation from the government's point of view.

"If you come from other regions, you will think "Wow! Ma sha' Allab! [God is great!]" We are really doing something! This is good... we have taken what was yellow and now it is green...If people from the interior see this, it is progress. If there is an open area, with nothing there; if we plant trees or put a park there then sure enough, people will come. Shops and businesses will come

¹⁶⁵ Interviews 1, 8, 10, 11, 12, 13, 16.

¹⁶⁶ Interview 13.

and people will want to live around the park. This is how we stimulate growth, tourism and the economy."¹⁶⁷

This concept of water use and beautification as an economic developmental strategy was very insightful and shows how the symbols of development have produced a radically different cultural connotation for water use in unsettled Oman. A number of the interviews cited the importance of beautification to tourism which is perceived as a very positive diversification of the economy.¹⁶⁸ Enormous amounts of capital have gone into preparing Oman to host people of global import and casual travelers alike. Water is an important part of the natural capital used to make Oman attractive to outsiders.

The importance of aesthetics does not stop at increasing tourism or boosting the local economy. During the discussion of development strategies, the same government official later remarked,

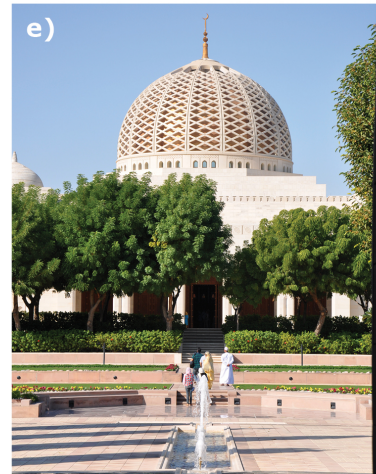
*"I am a Muslim and so I know that the Qur'an says there is a duty to develop the earth. In general, it is important to develop. Improving the environment is important. Some people only think about business, some think only about advertising our country, some think about the needs of the people. Really I think it is best to do something to improve the earth."*¹⁶⁹

As shown in the literature review, perceptions of development also stem from Islamic symbols of paradise. A new, development-focused reading of the *Qur'an* has reinvigorated age-old ideas about improving the earth in the image of paradise. This adds new pressures on the unsettled environmental and water ethic because now Omanis feel that the nation has a responsibility to expend more resources to improve nature according to a transcendent aesthetic, instead of a responsibility to conserve the natural environment. Ironically, the projects that put additional stress on Oman's scarce water resources are actually implemented in the interest of environmentalism.

¹⁶⁷ Interview. Anonymous government employee, Muscat Department of Parks and Gardens. This interview is not included in the main interview data set because this interview was not structured in the same way as the others, and the government employee was acting as a spokesperson for the Department, rather than commenting on his views as an individual.

¹⁶⁸ Interview 1, 11, 13, 16.

¹⁶⁹ Anonymous Interview. Muscat Parks and Gardens Department.



a) A residential road in a largely expatriate neighborhood. The perfectly-pruned, geometric bushes allude to the way that classical Arab gardens seek to perfect nature.

b) “The Wave” golf course is a private venture that has been lauded by the government for bringing Western tourists to Oman and diversifying the economy.

c) Ruwi Garden, Muscat. This public park is quite the attraction for Omanis in Muscat who use it for picnics and family recreation.

d) The pool at “Al Bustan” hotel. It is no coincidence that the name of Oman’s most luxurious hotel means “The Garden.” This name further associates symbols of paradise with the ideas of development and affluence.

e) The gardens at Sultan Qaboos Grand Mosque.

Figure 16: Muscat Beautification

This tension between the traditions of conserving water and the modern ideas about how to improve the environment are not fully reconciled. As one interviewee commented,

“In the past we didn’t have these gardens. People only watered trees that gave them food. People would see ornamental trees and gardens along the road and say ‘the government is wasting water.’ This news reached the Sultan and he said ‘No. These trees are the lungs of Oman.’ ...Now the people are starting to understand that this is not wasteful, and is necessary for the health of the country. Young people understand this but not old people.”¹⁷⁰

This quote illustrates that while urban Omanis have readily accepted new developmental symbols, there are still those in Oman who quietly carry on the traditional water ethic.

A Nostalgia for Tradition Remains

None of the interviewees directly challenged beautification projects or modernizing water systems, however quite a few in the pre-Renaissance generation described a some nostalgia for the traditional ways. For the man in Ar Rustaq who continued to use the *falaj* system, he did so purely because he enjoyed the routine and it connected him with his history and his place.¹⁷¹ Another man lamented the fact that his children will not ever have a taste of the old life, as he described sleeping near the *wadi* with his grandfather, waiting for their turn to divert water to their garden.¹⁷² Even several university students commented on missing the fun they had growing up in the countryside.¹⁷³ While symbols of modernity promote increased water use in urban areas, the traditional water ethic has also become a powerful symbol of national history.

For Omanis in settled, deep community contexts, doing things in the traditional way is perceived very positively, reinforcing traditional symbols that promote water conservation.

¹⁷⁰ Interview 16.

¹⁷¹ Interview 16.

¹⁷² Interview 1.

¹⁷³ Interview 11, 12, 13.

The *falaj* system and the stability of Oman's traditional culture have started to get national and international attention, giving Omanis a quiet pride in their history. For this reason, Omanis must subconsciously navigate between applying traditional and modern cultural tools based on the pressures of substance and symbol in relation to their community context.

Conclusion

The puzzle presented by ethical code switching in Oman is one example of the struggle that many groups face in navigating the unsettling cultural pressures of development and globalization. This case study has focused on environmental ethics towards water, seeking to understand why Omanis can simultaneously hold and act upon two seemingly contradictory ethical frameworks. Caught between settled and unsettled cultural contexts, this research illustrates how Omanis respond to new pressures of substance and symbol by absorbing new cultural tools and creating a continuum of different ethical strategies that relate to specific contexts. Because the conservative and consumptive water ethics are the products of distinct cultures, Omanis apply each of these ethics separately based on circumstance, rather than permanently adopting one ethic or another.

Understanding the puzzle of Omani water ethics is important because many water-stressed parts of the world are currently undergoing similar cultural shifts. Many regions in the Global South in particular are culturally unsettled at present due to globalization, urbanization and trends in development. In most of these places, the settled, traditional systems for managing water have been upstaged by parallel systems of Western water governance, which have largely been introduced as a form of development. However, as we have seen with Oman, technical development and social development precipitates cultural development, which does not always maintain a sustainable relationship between people and their environment.

To explain the phenomenon of ethical code switching, the quantitative and qualitative analysis of interviews with Omani citizens provides strong evidence for the effect of settled and unsettled community contexts on water ethics. The quantitative analysis of the

interviews through the software Atlas Ti and ArcGIS locates the strongest patterns in the data, notably the different pressures of substance and symbol in relation to water use, while qualitative evidence from the interviews, images and other cultural materials corroborate and explain these findings.

The interview analyses show three major categories of substance and symbol that influence how Omanis construct their water ethics. The first is the transition from traditional to modern sources of water, a shift that 14 out of 17 of the interviewees blame for increasing consumption. The second trend, is the importance of community context—both deep and shallow—in shaping water ethics. All of the participants agree that the relationships between Omanis and their rural communities incentivize conservation, whereas 15 said that urban communities do not apply that same pressure. Finally, 13 of the interviewees noted that new rituals and worldviews attached to development have created symbolic meanings for water use that support an increase in water consumption.

Water Ethics in Oman

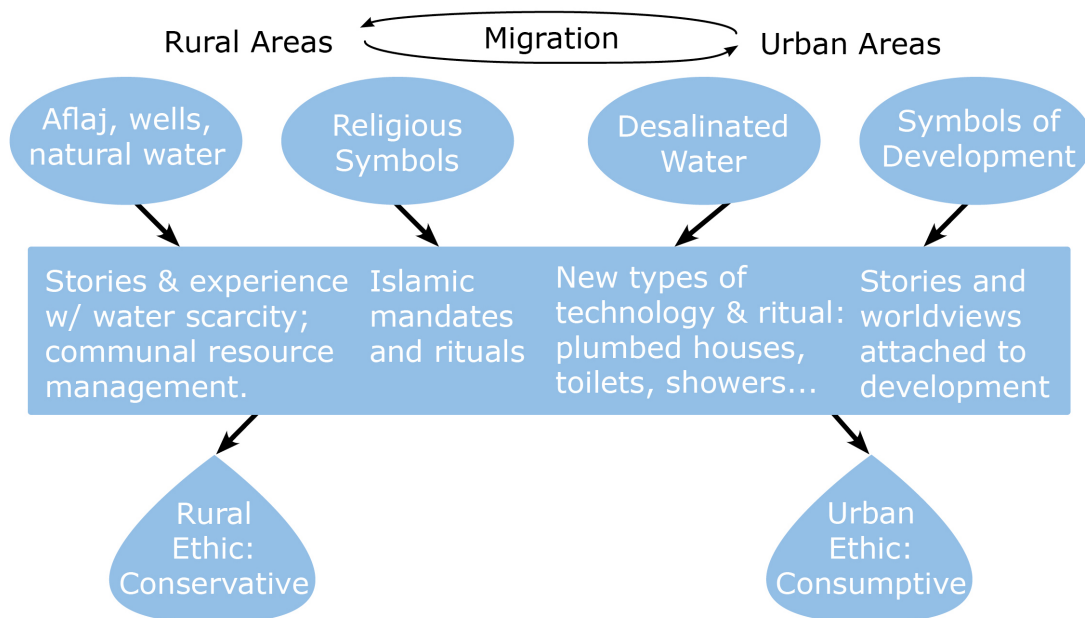


Figure 17: Water Ethics in Oman

As the data have shown, Omanis do not make decisions about how to use water based on resource availability, cost, or economic rationality. Neither are water ethics, determined by the monolithic precepts of the cultural “values paradigm.” Instead, Omanis have expanded their cultural tool kits to include new rituals and world views surrounding water use and development. These new tools have not replaced the old ones, but rather expanded the possible options for action. In a settled environment, cultural and religious norms provide pre-constructed strategies for action that are associated with clearly defined moral behavior. Individuals can garner respect from other community members by applying these strategies, and so they continue to do so without question. This is why Omanis continue to use water sparingly in the interior, even when the cost of obtaining the resource is the same as in urban areas.

In the city, an atomized social environment, the goal is still to gain honor and positive recognition from others. However, the identities of the individual and of the “others” passing judgment have changed significantly. In the city, the individual is anonymous, and instead the nation is the collective entity that seeks respect and pride. In the absence of “settled” cultural precedents as to how a nation can acquire honor in the modern era, Omanis have adopted an amalgamation of the competing ideology of the Western developed countries and historic pan-Arab developmental aesthetics to fill the void. Expectations for development now place Oman in comparison to other nations, aligning Western standards of water use with other positively viewed indicators of development, such as infrastructure, urbanization and finance.

In unsettled urban culture, prestige is not based on individual responsibility but rather on the nation’s ability to live up to developmental standards and precedents. In emulating the developed nations of the West, Oman as a country earns prestige. Increased

per-capita water availability, a water intensive urban lifestyle and immense public beautification projects reinforce Oman's sense of pride and accomplishment in comparison with other nations. As other nations recognize and praise Omanis for their efforts to develop their country in this way, the new urban culture is positively reinforced.

Thus, the conservative and the consumptive water ethics in Oman are not perceived as contradictory because Omanis apply these ethics in such distinct settings. The Omanis that commute back and forth between settled rural locations and urban ones have become subconsciously sensitive to a number of pressures: those related to traditional and modern water resources, the differences in expectations in shallow and deep community, and the importance of national pride gained either through development or preservation of tradition. By defining separate ethics in relation to these separate pressures, Omanis in unsettled situations simply code switch between different types of behavior in different contexts, instead of adopting or evolving a single strategy of action.

This analysis has several shortcomings, particularly as it relies on a very small sample of the population on which to draw conclusions. The small number of interviews and the variable quality of the responses makes it possible that other important trends in water ethics have been overlooked. The interviews are also problematic as hard evidence because environmental ethics are usually so normalized that the participants are not even aware of their own ethical constructs and would be unlikely to talk about them directly unless asked a leading question. Because of this, the qualitative analysis relies on many indicators that relate to a specific ethic, such as the use of a symbolically charged word or idea, rather than the interviewee's direct explanation of their ethics.

However, this study is still valuable because it explicitly departs from the "values paradigm" which is still often used to explain trends in environmentalism. Analyzing water

ethics and governance through an analytical framework for culture is an important step in advancing the general dialogue on environmental ethics, enabling more subtle understandings of pressures on ethics through Swidler's cultural tool kit approach. In particular, applying the concept of settled and unsettled cultural contexts to resource use creates a nuanced understanding of seemingly paradoxical behavior, elevating the importance of social context on peoples' decision making.

The Omani case study more broadly illustrates how people can expand their cultural tool kit and construct a variety of different ethics that enable them to alter their behavior in various cultural contexts. This method of explaining paradoxical human behavior and dissonant beliefs is relevant to many fields of study outside of environmental ethics as well, and could be employed to explain many other types of behavioral code switching related to unsettled cultural environments and circular migration. The type of ethical code switching that is happening in Oman is not an isolated phenomenon. Rather, it is a common theme in many parts of the world where cultures remain largely unsettled.

For arid regions experiencing rapid urbanization and development, particularly in the MENA region, Sub-Saharan Africa and China, Oman presents interesting policy implications. For governments needing to manage increased demand for water under conditions of scarcity, using media or other campaigns in new urban areas to construct conservative cultural tools may help promote sustainability and counter the effects of developmental symbols that prescribe a higher standard of water use. Sultan Qaboos has already started to implement some strategies for reframing urban water ethics by re-introducing traditional symbols to promote conservation, which should be analyzed for their effectiveness in changing behavior. It is possible through this analytical framework to imagine creative policies that could actually *direct* ethical code switching by re-labeling resources a precious,

re-establishing a sense of deep community in urban areas and even redefining national pride in relation to environmental conservation.

Finally, this thesis touches on a larger question for social scientists and environmental policy makers to consider. How do people decide how much water—or any resource—they *should* consume? This is not a question about how much is *necessary* but rather how much is *good*? It is essentially a question of ethics, which are dependent on the highly variable traits of culture and ecology. This thesis attempts to touch on this question in some small way, but much more research is needed to flesh out the relationships between substance, symbol, community, economy and the weight that each of these pressures bears in general on creating ethics.

Appendix

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Interview Topics

Traditional methods and of water governance

- What do you know about Aflaj water systems?
- What do you know about the ideas of water governance in Islam?
- How does collective water management work?
- Do people have to limit their water use? What is wastefulness?
- Are there social/cultural norms around using water?
- Are some types of water use ethical while others are unethical/haram? Where do those rules apply?
- Do you think these norms of water use are changing in rural areas? Why/why not?
- Do relationships between people matter when using/distributing water?
- What do you appreciate about rural lifestyles?

Water as a substance

- How often does water scarcity affect you?
- How much do you think about water?
- Do you worry about water scarcity?
- Is water scarcity a problem in Oman? Why or why not?
- Was water scarcity a problem in the past? Why or why not?
- What are the best ways to overcome water scarcity
- Who's job is it to provide/distribute water?

Water as a symbol

- What does water symbolize in Omani culture?
- What does a garden symbolize?
- What does water symbolize in the Qur'an?
- Are there any suras or hadiths that you know that discuss water?
- Are there any suras or hadiths that you know that discuss gardens?

Development and water in urban environments

- What are the best things that Sultan Qaboos has done to develop Oman?
- What does it mean to be a developed country? A developed city or town?
- What does a developed city look like?
- What do you appreciate about urban lifestyles?
- What do you think about desalination?
- What do you think about piped water?
- Is using a lot of water in Muscat haram?

Human Subjects Project Approval

Date: 11/27/2012
PI: Ms. Sarah Boone
Undergraduate Student
Jackson School of International Studies

CC: Sara Curran

RE: HSD study #44100
"In the Image of Eden: Development and the Omani Water Ethic"

Dear Ms. Boone:

The University of Washington Human Subjects Division (HSD) has determined that your research qualifies for exempt status in accordance with the federal regulations under 45 CFR 46.101/ 21 CFR 56.104. Details of this determination are as follows:

Exempt category determination: **2**

Determination period: **11/27/2012 - 11/26/2017.**

Although research that qualifies for exempt status is not governed by federal requirements for research involving human subjects, investigators still have a responsibility to protect the rights and welfare of their subjects, and are expected to conduct their research in accordance with the ethical principles of *Justice*, *Beneficence* and *Respect for Persons*, as described in the Belmont Report, as well as with state and local institutional policy.

Determination Period: An exempt determination is valid for five years from the date of the determination, as long as the nature of the research activity remains the same. If there is any substantive change to the activity that has determined to be exempt, one that alters the overall design, procedures, or risk/benefit ratio to subjects, the exempt determination will no longer be valid. Exempt determinations expire automatically at the end of the five-year period. If you complete your project before the end of the determination period, it is not necessary to make a formal request that your study be closed. Should you need to continue your research activity beyond the five-year determination period, you will need to submit a new *Exempt Status Request* form for review and determination *prior to implementation*.

Revisions: Only modifications that are deemed "minor" are allowable, in other words, modifications that do not change the nature of the research and therefore do not affect the validity of the exempt determination. **Please refer to the Guidance document for more information about what are considered minor changes.** If changes that are considered to be "substantive" occur to the research, that is, changes that alter the nature of the research and therefore affect the validity of the exempt determination, a new *Exempt Status Request* must be submitted to HSD for review and determination *prior to implementation*.

Problems: If issues should arise during the conduct of the research, such as unanticipated problems, adverse events or any problem that may increase the risk to the human subjects and change the category of review, notify HSD promptly. Any complaints from subjects pertaining to the risk and benefits of the research must be reported to HSD.

Please use the HSD study number listed above on any forms submitted which relate to this research, or on any correspondence with the HSD office.

Good luck in your research. If we can be of further assistance, please contact us at (206) 543-0098 or via email at hsdinfo@uw.edu. Thank you for your cooperation.

Sincerely,

Bailey Bell
Human Subjects Review Coordinator
(206) 221-7918

Code Definitions

Code Families and Priors:

Community Factors

- **Traditional Community** – Descriptions of traditional community and effects on water use
- **Urban Community** - How urbanization affects interpersonal relations and water use

Symbol

- **More use = development/wealth.** This code refers to the tendency for Omanis to equate increased water use with development, a strong positive association that resonates with the modernization goals of the Sultanate. This is used to justify use that would be otherwise considered haram.
- **Conservation = thrift.** This refers to the belief that only poor people need to save water in the city. Focus is on the monetary cost, not moral values.
- **Conservation = ethical.** This code refers to the belief that saving water makes you a good/moral person.
- **Waste = haram** – Many people used this word to describe wastefulness. This is important because it shows that they frame wastefulness in an Islamic context. In the scripture it says that those who waste are the brothers of Satan. Omanis continue to take this seriously in many environments.
- **Waste = not haram.** Does not carry the traditional religious connotation of haram.

Substance

- **Chg. Sources = consumption** - This marks an increase in consumption based on a change in source of water.
- **Change sources = conservation** – This marks a decrease in consumption based on a change in source of water.
- **Natural Water** – This marks the use of natural spring/wadi/well/aflaj water. Seen as a gift from god/national treasure.
- **Artificial water** – This marks use of Desal, pumped wells etc. Omanis do not view the use of desal negatively because it is artificial/man made. It is not as precious as the natural water that is a gift from god.
- **Public CPR** - This marks the use of common pool/public resources.
- **Private** – This marks the use of privately owned/accessed resources.

Reoccurring themes and sources for emergent codes:

“Trees are the lungs of Oman” – This is a phrase that the Sultan used to legitimize the building of many public parks in Muscat. It is very well known and came up several times in interviews. This places institutional water use/beautification in a positive symbolic light.

Symbol: “Water is a blessing” – Shows that Omanis, esp in countryside, have a strong association of water as a god-sent gift.

Symbol: Qur’an 21:30 – the most famous phrase relating to water in the Qur’an that virtually every interviewee brought up independently. (“From water we made every living thing – then will they not believe?”). Again, important to preserve water that was a gift from god.

Government Responsibility: Numerous interviewees discussed the responsibility to provide water/green spaces. This was always in the context of Urban/non CPR sites.

Generational divide: Young people are stereotypically considered the perpetrators of overusing water.

Gender divide: Men are stereotypically considered the perpetrators of overusing water.

Anecdote: A nice, illustrative story to use in the text.

Cup/Bucket: Many interviewees brought up a certain method to teach children not to waste water. This same method is repeated in governmental educational materials. Wash with only a cup of water, wash car w, bucket...