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Senior Thesis

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Grassroots Water Democracy in Southeastern Moroccan

Research Question

My thesis will aim to answer **“How do local stakeholders manage the khattara and saqiya irrigation system in Drâa-Tafilalet Province of Morocco?”** For the purposes of this project, I define stakeholders as the "asHab~~ah~~ as-saqiya," the constituent members of an irrigation community that collectively owns, uses and maintains the saqiya and khattara. I define management as the process of collectively governing the saqiya, the khattara, and their waters through informal political institutions.

The irrigation system under consideration comprises an underground groundwater withdrawal and transport system called a khattara and an above-ground water distribution system called a saqiya, which connects family plots to the khattara. A single community of stakeholders governs and manages both the saqiya and khattara, thereby requiring a holistic discussion of both components as part of a dynamic system.

Climate change and social transformation render the topic of khattara and saqiya irrigation especially important. As desertification and population growth reduce water supplies in Saharan North Africa, socio-political institutions that govern water will face increased pressures. Social transformation has further complicated the environmental dynamic as some communities move away from agriculture ~~and~~ towards the tourist ~~and~~ services sectors. Those factors have resulted in institutional changes in some irrigation communities and lend urgency to a more complete understanding of the political structures associated with small-scale irrigation in Drâa-Tafilalet. I anticipate that policymakers, stakeholders, scholars, students and analysts with interest in the

political culture of agricultural groups in Saharan North Africa, small-scale environmental politics of arid regions, and small-scale democratic governance of scarce resources could benefit from this research.

Finally, researching the governing institutions of the saqiya and khettara contributes a case study to an ongoing debate about why representative, consultative and consensus-based institutions for governing water resources develop. While some scholars attribute those institutions to broader political culture, others claim a common thread among institutions for governing common-use resources in general while still others point to environmental factors as playing a key role. My preliminary findings indicate that institutions for governing the saqiya and khettara are comparable to institutions for water governance around the world, regardless of environment or broader political culture. A further review of the literature is necessary before solidifying that conclusion.

Framework

My literature review broadly divides into secondary works concerning irrigation, Moroccan history and culture, and political theory. In part, my research aims to contribute to a conversation between those scholars who primarily trace governance institutions around water to environmental factors and those who primarily trace governance institutions around water to cultural factors. In terms of disciplines, the research primarily draws from political science, history, archaeology, sociology, anthropology and ethnography.

First, my research relies on a broad array of academic literature on irrigation. First, scholars have extensively studied qanat systems, a type of underground tunnel system used to transport water from a source to a populated area or agricultural site. Also called foggara, khettara, falaj and karez, qanat systems exist in various parts of the world and are especially prevalent in the Middle East and North Africa. Analyses of qanat systems originate in a wide range of disciplines and provide methodological guidance as well as points of comparison for my thesis.

Other works that benefit my research focus on the political institutions that govern small-scale irrigation systems. Geertz's "The Wet and the Dry" represents an early attempt at describing the environmental politics of two irrigation systems, one in Bali and the other in Morocco. Geertz argues that arid regions are characterized by less democratic forms of water governance than water-rich regions. My preliminary research finds arid areas with governing institutions based on consensus and representation, thereby contradicting Geertz's conclusion. John Welch's chapter in *Canals and Communities* also contradicts Geertz by demonstrating that there is not a meaningful correlation between availability of water and extent of democratic governance institutions for that water. Geertz's article and Welch's response presents an argument within the field of political ecology about how arid climates impact political institutions.

On a larger scale, some scholars have drawn from a broad range of case studies to come to general conclusions about the politics of irrigation. Mabry's *Canals and Communities* and Scarborough's *The Flow of Power* have helped me contextualize the khettara and saqiya governance system in southeastern Morocco among other methods of governing small-scale and traditional irrigation systems. Both books include sections dedicated specifically to irrigation in Morocco. Scarborough and Mabry both frame my research with conceptual frameworks applicable to the politics of irrigation and show the importance of governing institutions around irrigation.

A wealth of academic literature has focused on New Mexican acequia system, an extant system of small-scale irrigation brought to the area in the early 17th century. The acequia evolved from Morocco's saqiya, exists in a similar environmental context and is characterized by similar governance structures. Arellano and Rivera's books on the acequia especially helped me understand the informal political institutions that surround small-scale irrigation in arid regions. Rivera's discussion of water democracy in New Mexico provided me with a point of comparison and a framework for understanding the saqiya and khettara's governance.

A second category of sources primarily deal with the cultural and political history of southeast Morocco. Within this category, Bergh, Ilahiane and Rignall all discuss local politics in rural areas of Morocco. Bergh's "Traditional Village Councils, Modern Associations, and the Emergence of Hybrid Political Orders in Rural Morocco" illuminates the interaction between community based NGOs and traditional governance structures in southeast Morocco, facilitating a comparison between water politics and broader political culture. Ilahiane's "The Break-up of the Ksar" provides historical background about the transition from fortified castles to villages as primary modes of settlement in southeast Morocco. This article particularly benefits my research because I visited both fortified castles and villages to conduct research and learned about their comparative governance. Rignall and Ilahiane both write about the local politics of Moroccan oases, which has allowed me to better contextualize water politics within oasis political culture in the pre-Sahara.

Some ethnographic works on groups in southeastern Morocco have helped clarify the history and political culture of the region where I conducted interviews, providing context about the region's political culture. In particular, Hart's two monographs on the Ait 'Atta describe that tribe's political organization and history in great detail. While the majority of my interviews took place in Ait Khabbash territory, I did conduct two interviews in Ait 'Atta towns, Hart tangentially discusses Ait Khabbash in his two books, and the Ait Khabbash belonged to a broader Ait 'Atta confederacy for much of modern Moroccan history.

Other works take a wider view on Morocco within a Trans-Saharan system in which Drâa-Tafilalt has historically been a key participant. In geographically framing my research, I have prioritized understanding Drâa-Tafilalt as part of a Trans-Saharan system in addition to a North African one. Austen's book, *Trans-Saharan Africa in World History*, and Gearon's *The Sahara: A Cultural History* both present histories centered on the Sahara.

Third, works on political theory concerning governing the commons help frame my research. In particular, Elinor Ostrom's books on institutions and common-pool resources allow a

discussion of how societies govern the commons. Since the saqiya, khettara and their waters are treated as communal property, I anticipate Ostrum's theoretical work will be very useful.

I also plan to pull from political theory concerning civic engagement as it relates to natural resources. Sirianni's work in the field includes specific discussions of civic environmentalism, mostly in the United States, and discusses management of water resources.

Finally, Scott's *Seeing Like A State* argues the importance of respecting local knowledge and political culture in designing plans for improving people's lives. Scott's book therefore provides an important link between my case study and potential policy implications.

Methodology

I have completed 17 semi-structured and unstructured interviews in Modern Standard Arabic and Moroccan Darija with current and former male saqiya stakeholders, whose relevant social and political roles included shyukh as-saqiya (water chiefs), representatives of community-based organizations, and small-scale farmers. Geographically, 16 interviews occurred within Drâa-Tafilalet Province in southeastern Morocco. The remaining interview took place with in Fas-Meknas, which borders Drâa-Tafilalet to the north. The interview sites varied, although a majority took place in or next to farmers' fields, allowing for observation that often complemented the interviews themselves. Once, I witnessed a shaykh mediating a conflict between two stakeholders, one of whom approached on his bike during an interview. In some cases, farmers or shyukh as-saqiya gave me a tour of their irrigation community as they answered questions. I took careful notes on those experiences that I have preserved in my field notebook. Interviewees answered questions concerning political structures and customs associated with the region's small-scale irrigation system. They also described agricultural practices, oral histories, conflict resolution mechanisms and maintenance requirements surrounding khettara and saqiya irrigation.

I intend to analyze the data I collected in greater depth first by ~~by~~ compiling results according to the specific irrigation community. The size of irrigation communities varies widely,

with some comprising only a dozen families and others several hundred people. The number of interviews per irrigation community also varied. I conducted six interviews in Tamazant while I only completed one in Khettaret A'shish, for example. Some irrigation communities span across several towns while other towns have three or more irrigation communities serving different segments of their population. After arranging data according to community, I intend to identify trends in variations in saqiya and khettara governance in relation to geography, self-reported tribal identity, community size, self-reported environmental conditions, and alternative sources of economic livelihood.

Preliminary Findings of Case Study

Thus far, my research has resulted in data that illuminates a remarkably democratic system for governing the saqiya, the khettara, and their waters in Drâa-Tafilalt Province of southeastern Morocco. Irrigation communities regularly elect shaykh as-saqiya and their deputies through representatives of each kinship group in the community. In smaller communities, those kinship groups are the descendants of founding members of a community. For instance, in the irrigation community of Tamazant, plots were divided between seven families when the community began in the 1950s after sedentarization. As those families have expanded, their descendants have split the plots further in some cases while in other cases land has been sold along with the water rights associated with a plot. While smaller irrigation communities have less rigid customs concerning the term length of shaykh, each shaykh generally serves for one or two years before the water community's representatives gather to elect a new leader. Those representatives are also able to impeach an ineffective shaykh as-saqiya. Shaykh as-saqiya oversee water distribution by mediating conflicts, collecting funds for maintenance and enforcing customs of distribution.

Throughout the course of my interviews, I found that saqiya and khettara irrigation systems built in the 20th century differed in size compared to premodern saqiya and khettara systems. Oral history and documentary evidence dates most of the water communities that I visited ~~the~~ to the

1950s and 1960s. Interviewees reported that the first irrigation communities were established when villages were founded and that sometimes multiple irrigation communities consolidated or single communities divided. In the premodern towns and qsur (fortified villages) that I visited, interviewees also reported that irrigation communities had been a major part of political life since their founding. In the qsur, interviewees reported that democratic governance structures organize micro-urban life as well as agricultural life. Extant pre-modern khattara systems were much larger than modern ones, sometimes over 8 feet in diameter compare to 4 feet in diameter. Therefore, pre-modern khattara are able to serve larger irrigation communities but also require significantly more maintenance, meaning that shyukh as-saqiya in pre-modern systems wield significant political power. In one irrigation community, three interviewees reported that leadership had been hereditary in recent history but reverted to democratic governance.

The saqiya, the khattara and the fields that they irrigate are all overseen by shyukh as-saqiya and their deputies, rendering them important figures in oasis communities largely built on subsistence agriculture. Interviewees reported that communities elect shyukh based on their wisdom, trustworthiness and experience with the khattara and saqiya. No interviewees mentioned how social standing or lineage played into the election process. The irrigation communities that I researched were all patriarchal, with men representing kinship units in elections and therefore being the only people eligible for election as shyukh as-saqiya. Only men participate in voting for a shaykh.

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