

Common Property, Ethnicity, and Social Exploitation in the Ziz Valley, Southeast Morocco

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Abstract:

Contrary to much of the accumulated scholarship on indigenous resource management institutions in various parts of the developing world, this paper argues that common resources or property management in the small-scale irrigation communities of the Ziz Valley paints a complex historical situation where ethnicity, power, and religious ideology are employed to exploit the lower social classes. One of the essential claims of this paper is that sustainable and robust long enduring common property institutions can also exist in conflict-ridden and exploitation based communities and that just rules or the concept of law as understood in the West can not be applied to understand some components of common property management in the developing world.

Introduction:

In light of the recent droughts and famines that ravaged the Sahel, and recent attention on sustainability, much of the development literature stresses indigenous resource management strategies as a solution to the plight of the poor and vulnerable in Africa. True, however, much care is needed when assessing the vulnerability of the poor and advocating the rehabilitation of indigenous or home grown institutions to protect the community from social and natural perturbations because these same institutions may potentially act as barriers to any well intentioned development effort (Arnould 1990:10-11; Chambers 1989:1-2). Indigenous communities are not as beautiful and as egalitarian as the literature tends to describe them. Rather, they are often conflict-ridden entities in fierce competition over marginal and scarce resources, in our case traditional irrigation. In the Ziz Valley, common property is mediated via

ethnicity, power and religious ideology, and used to block the other classes from access to the means of production. In short, the paper argues that there is a direct relationship between common property management and exploitation leading to the exposure of the black population to exploitation by the Berbers and the Arabs.

The structure of this paper is as follows: (1) I begin with an historical background and a geographical description of the region, (2) I present a critical discussion of typologies in irrigation studies, (3) I examine the relationship between common property and exploitation at the village level, (4) I turn my attention to reflect critically upon the usage of water rights in conflict resolution, and finally suggest that, perhaps, students of common property management would be better off understanding the underpinnings of collective activity if they shift their attention to the study of common property institutions in complex environments.

Geographical Setting and Historical Background:

The Ziz River Valley is a 250 km-long ribbon of irrigated agricultural land winding through the harsh landscape of southeast Morocco (see map 1). The Oued Ziz tumbles out of the eastern High Atlas south of the Jbel Ayache range (3760 m), flows east through a long gentle valley, and then turns south to plunge through the scenic Ziz Gorge, to serve the middle Ziz valley, and to meander through the broad alluvial Tafilalet Plain. Mountains give way to rugged plateaus and canyons, then again to broader basins and gentle hills, and finally to flat Saharan wastes, the Hammada. The Ziz drains approximately 14,125 square kilometers, a watershed with an average altitude of about 1100 m (O.R.M.V.A.T. 1991).

The harsh environment south of the High Atlas mountains does not deny human habitation. Where there is water, there is life. The region is arid with diminishing relief and elevation from north to south (150-350 mm/annum). Over 1 million date palms and many

thousands of olive trees mark the twisting, 0.5- to 10- km wide, valley as it bisects the Province of Errachidia. The Province covers roughly 10% of Morocco. According to the 1982 census, the population of the Errachidia Province is 466,965, divided into 87% rural and 13% urban . The Ziz Valley population is concentrated around reliable water and urban markets and service centers. Approximately 61% of the population is employed in the agricultural sector. Population density is high in both urban and cultivated areas (approximately 15/ha), and scattered elsewhere. The average farmer's holdings total less than a hectare (.86 ha), with about 65-70% of his holdings under cereal cultivation (.6 ha) and the rest under alfalfa and seasonal vegetables or occupied by perennials, such as olive, fruit and date palm trees (Ilahiane et al. 1991).

The history of the Ziz Valley can be viewed as a chronicle of competition for scarce water and land resources. Historical events and processes have, in turn, left their mark on the environment. In the Tafilalet Plain, near the tail end of the riverine oasis, the medieval town of Sijilmasa flourished as an entrepot in trans-Saharan trade. Cultivation of date palms is king in the lower reaches of the Ziz River. Rainfall on the high mountains produces enough pasture to feed goats, sheep, and camels. Pastoralism is vertical rather than horizontal. The transhumant population owns houses, grain fields and storage, and date palms. Pastoralists in our case are the Berbers of the oasis and not the Arab population, although there are Arab pastoralists known as Dawi Mani'. The Ait Khabash and the Ait Umnasf, two major subtribes of the Ait Atta dominate the upper and lower pasture and agricultural lands of the Ziz Valley. The first language of the Ait Atta is Tamazight, one of Morocco's three main Berber languages.¹

During the nineteenth century the lower and upper Ziz came under the control of the Ait Atta. According to the local reconstruction of oral history, the Ait Atta specifically the Ait

¹ The three Berber dialects are: Tamazight, Tarifit, and Tashlhiyt.

Khabash subtribe entered the Ziz Valley, particularly the Rtbat middle stretches of the Ziz, at the time when France embarked on its colonization of Algeria in 1830 (see Figure 1.1).² The Ait Khabash together with the Ait Umnasf in the Rtbat region occupied sixteen *Ksur* or villages by the end of the nineteenth century (Dunn 1977:93 and 1972; Mezzine 1987). In the Rtbat region, the Ait Khabash expelled most of the inhabitants and confiscated most of their lands and property. The Ait Khabash warriors had no mercy on "the slaves of the earth". They extended their power through domination over the trade routes escorting caravans between Touat in southwest Algeria and Tafilalet and also practiced what we call in Berber *taqta't* or the "piracy of the road", a form of social banditry (Dunn 1972).

The Berber aggression was directed towards the control of the agricultural resources more than the occupation of pastures. The Ait Atta never regarded cultivators, Arab or Black, as their social or political equals. Their strong sense of ethnic superiority over sedentary Arabs and Blacks dictated that all men of the soil were to be subjected to domination and coercion. By 1912 and the beginning of the French Protectorate, the Ait Khabash had already established themselves in the Rtbat region.

The division of society into social classes is well defined in the villages (*ksur* in Arabic or *ighrman* in Berber). The village's community and hierarchical chain of being is made up of seven classes: Shurfa, Murabitin, Berber, Ahrar, Haratine, Rgaga and slaves. The three prestigious classes in the village are the Berbers, the Shurfa, and the Murabitin. The Shurfa are believed to be descendants of the Prophet Mohammed through the line of either Idriss al-Awal of Fez or Mulay Ali Sharif of Tafilalet. The former was the founder of the first Arab dynasty in Morocco in the eighth century (who built the city of Fez in 892 AD). The latter was the founder of the

² Moha ou Hdou, a 75 year old member of the Ait Khabash, claims that the Ait Khabash entered the Ziz Valley, Rtbat to be precise, when the French invaded Algeria in 1830 (Interview, Zaouit Amelkis, August 15, 1991).

Alawite Dynasty in the seventeenth century and still rules Morocco. They are entitled to a number of communal privileges and personal immunities.

The Murabitin are thought to be the descendants of holy men who were revered as saints. The living members of a saint lineage are responsible for the maintenance of his shrine (*zawiya*) and for the administration of gifts of money or heads of sheep/goats donated by the followers of the saint. The difference between them and the rest of the population is their possession of *baraka*, the quality of divine grace. Because of their *baraka*, the Murabitin and the Shurfa serve as respected and credible men in deciding and mediating communal and personal conflicts (see Gellner 1969; Jamous 1981).

The fourth class is known as the Ahrar meaning "freeborn". The Ahrar represent the free cultivators. The Ahrar group distinguish themselves from the lower Haratine group by pointing to their lineage organization and their fair skin. The fifth class is the Haratine, which carries most of the menial work in the village and has low social status in the eyes of the other classes. Most of them have dark skin and Negroid features. They usually work for a fifth of the crops which they plant and harvest. Most of them are landless. The term Akhmas, which refers to someone who works for a fifth of the harvest, is used as a synonym for the Haratine.

The sixth group is made of Rgaga. Most of them are also landless. The only difference between them and the Haratine is the fact that they speak Berber. Rgaga are newcomers to the upper Ziz valley. Because of the recurrent droughts, they migrated to the upper Ziz communities or were brought by Berbers to cultivate and work land. They trace their history to the lower end of the Ziz Valley, traditionally occupying the area of Alnif and Mssissi between Rissani and Zagora. They are known for their henna (*hanna: Lawsonia inermis*) cultivation. Finally, there were the slaves or Ismkhan in Berber. Slaves are black and thought to have originated from *Bilad al-Sudan*. Slaves worked as domestics and shepherds. The slaves were

integrated into households and tents of the families they served and usually had personal ties with their masters. For this reason a slave had a higher standing in the eyes of a Berber or an Arab than the Haratine.

Typologies in Irrigation Studies:

Water is the subject of many traditions and interpretations advanced by the Prophet and the four Islamic schools of law. In their interpretations of the Koran and the Hadith (the Prophet's sayings and deeds) with respect to the distribution of water, sharing and rights of ownership, the four schools conclude that water may be individually owned, bought and sold or held and managed communally. The four schools place a great emphasis on the right of *shafah* (the right of thirst), that is the right of every living creature to drink so as to quench its thirst.³ Among the Sunnis, the Hanafi school tolerates the use of force by a thirsty person in the case of an extreme necessity (Caponera 1973:13-14). Unlike the Sunnis, the Shi'a condition the right of ownership on the prior consultation of the owner when water is privately held (Ibid., 18). Thus, these divergences and differences in the interpretation of water, given its scarce and transient nature, demonstrate the complexity of the rights of water and the importance of local customs, ethnicity, climate and geography in defining the rules of water distribution and ownership.

The Medieval Islamic agricultural revolution would have been impossible without the improvement and extension of irrigated farming. "The first step to a successful harvest", contends Ibn Wahshiya in The Nabatean Book of Agriculture, "is to ensure that the earth accept the seeds. Then follow irrigation, the blowing of the winds, the heat of the sun and the other things..." (quoted in Watson 1981:37); this medieval common sense, for the most part, is still the

³ The four Islamic Schools of Law are: The Hanafite founded by Abou Hanifa (669-767 AD); The Malikite by Malik Ibn Nas (715-795 AD); The Shafiite by Shafii (767-820 AD); and The Hanbalite by Ibn Hanbal (780-855 AD).

basis of agricultural practices in much of the arid Islamic areas. Thus, given the arid and semi-arid environment and the unpredictable climate of most of the North African region, water has been the essence of life.

Wittfogel makes the distinction between a "farming economy that involves small-scale irrigation" which he calls "hydroagriculture" and "one that involves large scale and government-managed works of irrigation and flood control" which he calls "hydraulic agriculture" (Wittfogel 1957:3). Glick identifies "two cultural types" of water distribution. One, the Syrian, is "modeled after the Barada River of the Ghula of Damascus." The Syrian type is associated with large rivers and water rights are inseparable from land rights and water is distributed proportionally. The other, is the Yemenite, "typical of the small, oasis-like" setting where water rights are separable from land rights and where water is sold, bought, and measured according to the prevailing norms of the location. The main difference between the two cultural types is determined by the scarcity of water. In the Syrian type, due to its scarcity water is distributed proportionally and everyone suffers equally. In the Yemenite model, some families or individuals have power or monopoly over the rights of water and they are the last ones to suffer from the shortage of water (Glick 1970:230).

- In this paper, we are concerned with a simple small-scale irrigation system in the Ziz Valley oasis with particular focus on the village of Zaouit Amelkis. The village of Zaouit Amelkis which has a population of 1256 (185 households of which 21 are Berber, 16 are Shurfa and Murabitin, 2 are Ahrar, 4 Rgaga, and the rest are Haratine) represents a good case study to examine the relationship between common property management and social stratification (O.R.M.V.A.T. 1991:1-2).

The irrigation network of the village could be described as a local folk model which Levi-Strauss calls the "homemade model" (Lévi-Strauss 1953:327). This irrigation system shares

some of the characteristics of the two models. Like the Syrian model, the Amelkis network is characterized by the inseparability of water rights from land rights but it fails the test of equal distribution of water. Like the Yemenite model, it shares the oasis type setting based on a small river, however, water rights are inseparable from land rights and water is neither sold nor measured. Thus, the village represents a complex picture that escapes any simple typology. This complex situation can be understood through an analysis of endogenous and exogenous factors that shaped and perpetuated the maintenance and operation of the irrigation system of the village.

For a while now, ethnographies of water rights in rural Morocco have been confined to a simple interpretation and description of rules, whether these rules were based on the *shari'a*, introduced by the French and Spanish colonial administrators or a product of tribal customary law, *al 'urf wa l'adat*. Research on the association between the rules of water and social stratification has been ignored only mentioned briefly in passing. Some anthropologists and other social scientists have tried to find the relationship between the social order and the way irrigation functions, and have correlated water distribution with a segmentary model of the tribe (Abdellaoui 1987; Berque 1978:143-45 and 153-55; Bouderbala et al. 1984; Chiapuris 1977:211-13; Geertz 1972:32-35; Gellner 1969; Glick 1970:172-74; Hammoudi 1985; Hart 1976:107-116, 1980, and 1984; Mahdi 1986; Miller 1984:77-86; Mendes 1988, Nadir 1980:126-36).

Hammoudi (1985), writing on water rights and water distribution in the Dra'a Valley, clearly maps out the local and regional historical dynamics that influenced the land and water tenure system. He discusses the impact of the religious status of the Arab Shurfa and Murabitin, the power of the Berber nomads, and the low social status of the Haratine on water distribution in the valley. Unlike the Ziz Valley where water and land rights are joined resulting in what is called *mulk* or private ownership, Hammoudi discusses two systems of water distribution in the

Dra'a: the *allam* system in which water is a common property and resembles the Ziz Valley's system and the *mulk* system in which water is a commodity subject to market demands.

According to Hammoudi, the difference between the two systems is that under the *allam* communal system, like the Syrian model, a person is entitled to a water share to irrigate his or her field; in *mulk*, analogous to the Yemenite model, water becomes a commodity bought and sold (Hammoudi 1985:39-41).

On the whole, nevertheless, Hammoudi's analysis remains operational at the inter-village level and stops short of discussing the intra-village-based processes by which the corvee labor of the low classes is manipulated by the privileged ones to maintain the "communal" irrigation infrastructure. In this paper, we will develop and further the argument of religious ideology, ethnicity, and power as determinant factors in the distribution of water in the oasis of the Ziz Valley where water distribution is based on the *mulk* and water is thought of as common property. For reasons that will be discussed below water is not, in fact, a common property, but by bestowing on it a common property garb the religious and powerful members of the village succeed in mobilizing the labor of the landless population for the maintenance of the system.

Common Property and Collective Duties:

Although many students and theorists of common property have tirelessly tried to refute Hardin's concept of the tragedy of the commons (Hardin 1968), much of the debate has remained hostage to vague assumptions imposed on medieval irrigation societies and present day Third World irrigation communities (Bromley 1992; Hunt 1986; Mahdi 1986; McCay and Acheson 1987; Mendes 1988; Netting 1981 and 1993; Ostrom 1990 and 1992; Park 1992 and 1993; Runge 1984).

Lenton (1987) spotlights two contested tendencies in government intervention in farmer-

managed irrigation systems: intensifying state involvement via usurpation of local management participation and curtailing government interests by delegating management accountability to the irrigators organizations. Most rural irrigation communities endure largely because of their remoteness and independence from state and market structures. Governments often integrate these communities into national planning agendas for various reasons (e.g., national security, taxation, markets expansion, etc.).

Perhaps the most perfidious governmental weapon for attaining these interests is through the construction of waterworks beyond the indigenous fund of management skills and capital available to rural groups (Lees 1974). Agricultural instability, landlessness, and institutionalized corruption are the most common outcomes: integration into centralized systems drains capacities to cope appropriately with local perturbations and amplifies the impact of long distance disturbance and remotely sensed mediation in the form of urban bureaucratic meddlings (Wade 1988; Scudder and Colson 1977; Barnett 1977).

Comparative irrigation literature also indicates that communally based agricultural institutions crafted through grassroots initiative often succeed, but those imposed from above rarely do (Coward 1979 and 1980; Groenfeldt and Mook 1989; Hunt 1986 and 1989; Tang 1992; Ostrom 1992). For instance, Tunisian agricultural communes and water user associations crafted by the government have performed poorly because of their social and economic detachment from pre-existing farms and villages in the immediate vicinity, and because they had no permanent rights to their land and water resources (Hopkins 1990).

Other principles guiding farmer participation derive from Sri Lankan and Indian studies showing that communal participation is more easily induced where water supply is relatively scarce and uncertain rather than absolutely scarce or abundant (Wade 1988). For example, an analysis of Nepalese irrigation found that farmers who had cooperated to acquire water supplies

were more likely to participate in subsequent allocation, maintenance, decision-making, and conflict resolution activities (Martin and Yoder 1987). Finally, Coward (1979), Siy (1987), and Bagadion (1987) describe a "participatory approach" to irrigation development in the Philippines that is strikingly similar to the strategy used in the Ziz Valley. These authors trace the roots of this approach to growing recognition of the importance of community involvement and local action embodied in "the combination and recombination of water users and land areas" nested in a multi-layer organizational hierarchy (Coward 1979:34; Chambers 1988).

Park claims that, "common property in the flood recession case is intrinsically hierarchical and does not involve individuals having equal rights; imputation of the tragedy-of-the commons scenarios to this case would be a misapplication of 19th- and 20th- century economic liberalism" (Park 1992:96). Having said that, I will push Park's claim further and suggest an association between common property and exploitation in the village of Amelkis and its surrounding villages.

In the Ziz Valley, the irrigation community is made up of several connected villages (*ighrman* in Berber) using a communal canal that irrigates the fields. Each village has a local council (*taqbilt* in Berber) that administers the social and political organization of the village. The border limits are known and recognized by neighboring villages. The management of water and land fall under the responsibility of the *taqbilt*. The canal (*saguia* in Arabic and *targa* in Berber) draws water from the dam and leads it to the fields to be irrigated. The canal is considered the property of the village or the villages that use it and maintain its operation. The neighboring villages recognize each other's rights of ownership, construction, and maintenance duties. The same rights apply to the construction, maintenance, and ownership of the diversion dam that feeds the main canal. The two Amelkis dams are located far upriver from the village so that the canal could cover as many fields as possible (about 7 kilometers from the village).

The canal is owned by the community. It is maintained and constructed by the

community and is considered a common property of the people of the village. It is managed by the *taqbilt*, which punishes offenders and settles disputes with other neighboring villages. The water channeled through the canal is the property of all members of the community. It is the concern and business of everyone. Breaking a dam or diverting water from the canal or the dam has led to bloody disputes and water wars within and between villages. The location of the dam requires negotiations and pacts with the villages whose territories the canal traverses as well as a permitting topography and slope. As is the case of Amelkis, a daily share of water is given to the upper river village of Bousaid and Lkenz for the right of passage. The weekly division of water reflects the agreements reached over many years by the concerned villages. It also shows inequality in the weekly division of water among the villages.

As the main canal reaches the fields to be irrigated, the canal divides into the upper *targa* and the lower *targa*, which in turn divide into secondary and tertiary branches and then into *lmsarf* leading water straight to the fields. The main canal is the business of all villages concerned; the lower and upper *saguias* are of concern only to Amelkis. The secondary and tertiary ditches come under the responsibility of the owners that get their water from them and, therefore, are responsible for their maintenance. The last linking piece, *lmsarf*, can fall under the property of one person or two, on the west side of the village. On the east side, as the main canal or *saguia* approaches the borders of the village, it divides into tertiary branches and then into *lmsarf* straight to the fields. In some places, however, the main canal feeds *lmsarf* directly to the field. The same rules apply on the east side as on the west side. Thus, the water that a person gets is completely his/her property just as he is entitled to his/her land property. Water rights are not separated from land rights, nevertheless, water is still considered to be the outcome of collective obligations (see Figure 1.2).

The system of water distribution in Amelkis is based upon the principle of *mulk* meaning

private ownership. Under this system water and land rights are inseparable. The *mulk* system allows the owner of a field free access to water and as much water as his field needs. This is the case of most of the fields situated on the diversion location of the two upper and lower *saguias*. The owners of the upper canal fields can take as much water as they wish without taking into account the interests of the lower canal field owners. Most of these lands are owned by the Berbers and the Shurfa and Murabitin. The owners can irrigate their fields twice a week while the lower canal owner has not irrigated his/her field in two weeks. This inequality of the distribution of water as well as lands situated on the upper canal is reinforced through the customary rule of the priority of the upper canal lands over the lower canal lands (see Figure 1.2).

During the times of scarcity, especially in the summer, water could be rationed and an announcement is issued by the *taqbilt* to assign days or half days to specific zones of the palmeraie. This type of water assignment rarely happens. This liberal policy of water distribution is not only the product of the local law and relative abundance of water but also the reflection of the historical impact of the Ait Khabash terrorization and conquests in the region. Given the transhumant nature of the Ait Khabash, it was ecologically fitting to instate the *mulk* system and use force in the conquered areas; for this warfare coping strategy helped the nomads to conjugate the risky environmental tenses of the desert and the sown alike in accordance with seasonal scarcities and adaptation requirements.

As soon as the Berbers settled their accounts with the sedentary population of the village, they started dividing the lands among themselves. The partition of land was based on the "law of the first occupant". In essence, this "no man's land law" imposed on indigenous communities echoes, ironically, the American expression "first come first served" set in motion to justify the early 19th century development of the Western United States. Although the settlers were the

last to arrive, the frontier conquering ethos overlooked, if not violently breached the rights of the natives, leading to the unethical appropriation and seizure of the native Indians' lands and water through the use of unequal treaties, broken pacts, and sheer force. Far from the democratic ideals of the then young American republic and the violence done to the natives' subsistence base, the structure of Ziz's situation is unique as Mezzine points out that in the 18th and 19th centuries:

Chez Ayt Atta pour lesquels le processus de sédentarisation est relativement récent (XVIIIe-XIXe siècles) la tradition orale rapporte que quand un groupe décide de s'installer, que ce soit d'ailleurs sur une terre vierge, Comme ce fut le cas au Rteb, la terre conquise était divisée en autant de parts qu'il y a de familles à installer. Ces parts étaient généralement, constituées de plusieurs bandes de terrain perpendiculaires à la vallée.... Chaque part comportait obligatoirement, une bande en amont, une autre au centre, et une troisième en aval pour permettre également une bonne partition de l'eau, et de la qualité de la terre sur les membres du groupe (Mezzine 1987:202).⁴

Another tradition reports that once the Berbers conquered a village the first thing that any member of the group did was to drive a claim stake on the property that happened to be before him/her. This is known as *wat tagut* or *drab lwtad* in Arabic; to hammer a stake on a piece of land gave the member automatically the right of ownership regardless of who the past owner or user was. The practice of the *mulk* system (*aharmil* in Berber) has its reasons. The Ait Khabash nomads practiced transhumant migration between the oasis and the marginal grazing lands of the High and Anti Atlas mountains. The implementation of free and individual holdings of water and land facilitated their tasks to do whatever they wish with their shares. For the nomads, water and land represented the economic alternative to cover the deficit of water in

⁴ Among the Ait Atta for whom the sedentarization process is relatively recent (XVII-XIXth centuries), oral tradition states that when a group decided to settle, whether on virgin lands or not, ... as was the case in Rteb, the conquered lands were divided into as many parcels as there were households to settle. These lands or fields were generally made up of several parcels perpendicular to the valley ... Under obligation each household's portfolio contained one parcel in the upper, one in the middle, and a third one in the lower reaches of the valley so as to guarantee an equal distribution of water and good quality land among the members of the group.

summer and dates, and grains needed in the winter season.

The Shurfa and the Murabitin established their religious authority through preaching and persistent insistence upon their descent from the Prophet and holy men. All things considered, the Berbers installed themselves through the use of sheer force and the Arabs used a religious coloring to establish their place in the village community. It seems that little has changed since the time of Ibn Khaldun (1337-1406) in the sense that the Berbers tend to capitalize on the principle of sheer force and *'asabiya* (group feeling) in their conquest of the oasis and domination over the locals. By contrast the Arabs explicitly used religion and placed a great importance on religious distinction as a means towards a higher social status in the community (Ibn Khaldun 1958:14-17).

In the *mulk* system, water rights are not separated from land rights. Water is neither sold nor bought, it is not a commodity. It is an independent variable that those who own most of land can exploit to the maximum at the expense of those who own small parcels at the lower and marginal canal areas. Under this system, one has the right to water the area under cultivation. Time measurement of how much a fellah (peasant) is entitled to is not the norm in the village. There is no measurement of timing of the distribution of water among the inhabitants of the village. The water that one receives is a function of his/her field. Shifts in the rotational cycle are not practiced within the territories of the village except in times of extreme scarcity or during the planting of corn since corn requires three or four successive irrigations in its early growth stages. During the planting of corn, it is not unusual that the *taqbilt* issues an announcement in the mosque that the Prayer Caller (*al-Muathen* in Arabic) transmits to the whole village from the mosque's tower.

The announcement sets the zones and the timing for the beginning of the shifts in the rotational cycle. The announcement specifies the starting point of the shift. The standard

measurement during the corn planting period is based on *dur* in Arabic and *tiramt* in Berber, that is, a shift or a turn. Shift is not time conscious but rather a function of the area under cultivation. The shift starts from the upper canal fields to the lower canal fields. The shift is area, canal, upper and lower *saguias*, and *lmsarf* specific. The shift resembles a chain of people queuing for water and the queuing is followed meticulously thanks to the presence of the Water Guard's watch dog responsibility.

Stealing or diverting water from one field to another or from one *saguia* to another is completely unacceptable at this time of the year. The offender is subject to a public denunciation from the mosque's tower and later given the choice between feeding four and five people for a lavish dinner (usually involving 2 members of the *taqbilt* and the *imam* or *lfqih*, in the local parlance, of the mosque) or community service in the form of clearing and cleaning the major *saguias* for one man/beast labor day or two (usually a donkey) so that water runs smoothly without the hindrances of weeds and other aquatic plants.

The dinner expenses are usually stiff for the poor and landless to bear and to save face he is compelled to negotiate his way through credit, which in turn, makes him indebted and dependent on his patrons. This practice of "feasting" is locally called *nzul* from the Arabic verb *nazala* meaning to "fall on someone". The *nzul* institution as any other institution has a practical function which is to sanction the offenders and teach others a lesson in communal administration, but the underlying principles of it are to bankrupt (to break the back of someone financially: *igsru*) an offender and at the same time reinforce the religious ideology of some and perpetuate the vulnerability and dependence of the landless on the powerful members through credit, morality pounding, and religious preaching in the form of a ceremony led by the *imam* and the guests locally known as *salka*.

Among the villages, water distribution and scheduling is permanently fixed. People do

know the details of the process. The days of the week for each shift are fixed for each village.

The main canal of the west side of the river covers three villages: Bousaid, Zaouit Amelkis, and Jramna. On the east side, the canal covers also three villages: Lkenz, Zaouit Amelkis, and Zwiwia. On the west side of the river, Bousaid has the right to use its shift from sunset Saturday to sunset Sunday; Zaouit Amelkis from sunset Sunday to sunset Thursday; and Jramna from sunset Thursday to sunset Saturday. On the east side the main canal traverses three villages and water shifts are allocated on a weekly division of water. Lkenz uses its water right from sunset Saturday to sunset Sunday; Zaouit Amelkis from sunset Sunday to sunset Friday; and Zwiwia from sunset Friday to sunset Saturday.

It is important to keep in mind that the inhabitants of Bousaid, Lkenz, and Zwiwia are predominantly Haratine. Zwiwia is completely Hartani or Black; Lkenz and Bousaid are predominantly Hartani with a small minority of Berbers and Arabs. This inequality of water distribution illustrates the historical impact of the Ait Khabash on the community. The arrival and settlement of the Berbers in the valley imposed the *mulk* system and, therefore, barred others from control and access to resources.

The *mulk* system is based on the weekly fixed division of water. Access to the weekly water allocation is usually enjoyed by the powerful Berbers and the people of the *baraka*, the Shurfa and the Murabitin who trace their genealogy to the Prophet or simply by virtue of being a Sharif or a Murabit. The priority and access that the two groups enjoy reflect their higher status in the community. In Lgara's *ta'qit* (constitution) of 1883, a Berber dominated *Ksar* in the middle stretches of the Ziz Valley where the Haratine were institutionally and virtually blocked from owning and having access to the means of production, it was stipulated that, "Si quelqu'un vend une maison à un qabli le vendeur aussi que l'acheteur sont passibles d'une amende de 100 mithqals chacun. L'achat de terrain (par le qabli) est également sanctionné par la même amende"

(Mezzine 1987:193, section [21]).⁵

The management of the irrigation system falls under the village council. The system is fixed and everyone knows the rules. The council appoints a *Saguia* Guard or *amghar ntarga* to supervise the management of irrigation on a daily and nightly basis. He is usually poor, a trusted man, and a practicing Muslim. The Water Guard makes sure that the irrigation system runs smoothly according to the norms of water distribution set by the community. For the maintenance of the dam, there is a yearly campaign on the village level to mobilize the work force to repair and fix the dam, the canal, and the major branches. Communal help is called upon when the dam is destroyed by floods. For the maintenance of the irrigation system, all males past the age of puberty (all males who can fast Ramadan) have the obligation to take part in the upkeep of the dam) regardless of whether they own land or not. Lgara's *ta'qit*, a Berber dominated village 15 kilometers due south east of the villages we have been dealing with, makes it obligatory that "Si le Shaykh ordonne la mobilisation de tous les pubères (*hadd saym*) [pour effectuer une besogne], tous les Hartanis devront être presents. Celui qui s'absente, est passible d'une amende de 5 uqiyas" (Mezzine 1987:234, section [21]).⁶ The participation of the non-owners in this process is based on their membership in the village community.

In normal times the work force provided by each private holder is a function of his/her holdings. The Shurfa are usually exempt from this kind of work and their Haratine domestics "volunteer" to do their shares. It is believed that by sparing the Sharif from this menial work, the Hartani domestic can get some *hasanat* (after life rewards) and *da'wa* (a blessing) that would potentially count as a worthy deed in paving the road for him/herself to *ljanah*, Heaven. The

⁵ If anyone sells a house to an aqbli (Hartani) the seller as well as the buyer will be fined 100 mithqals each. Purchase of any sort of land (by the aqbli) is equally fined by the same amount.

⁶ If the Shaykh demands the mobilization of all the pubescent labor for an irrigation maintenance task all the Haratine must be present. He who happens to be absent is fined 5 uqiyas.

element of *baraka* that the Shurfa possess or imagine owning induces the Hartani to perform labor for them; this inflated and never devalued symbolic capital asset typifies this precious commodity employed to contain the Hartani's compliance and, at the same time, disengage, if not arrest, his/her unexpressed forms of quotidian resistance and assert its dormant characteristics. This monopoly of *baraka*, in one manner or another and to be sure it functions in many ways, succeeds in extracting menial and agricultural labor from the Haratine that the Shurfa are exempt or pretend to be exempt from on the basis of their religious genealogy or simply because they are holy men and women.⁷

The Berbers usually hire the Haratine to fulfill their share in the upkeep of the irrigation network. Despite their labor contribution, the lion's share of labor for the maintenance of the system comes from the landless Haratine who are caught stealing produce in the palmeraie (grove) and the gardens. The men or women caught stealing alfalfa (alfalfa is used as fodder) or other produce from private gardens and orchards (*jnanat* or *urtan*) are brought in front of the village council and assigned a certain number of man and beast labor days depending on the nature and context of the offense.

The palmeraie has a guard or *amghar ntmazirt* whose responsibility is to make sure that nobody steals from another's field. The stealth labor tends to be high because most of the Haratine are landless and barred from access to the communal grassy river and canal banks that nobody cares to use. Denying the landless Haratine the use of the river and canal banks as well as field or parcel boundaries for gathering grass and grassy plants (supposedly belonging to nobody) is justified on the basis that if a person does not own or lease land he has no business in

⁷ For religious reasons the Shurfa and Murabitin women are secluded. This practice shields them from agricultural and manual labor. To fill this "white space", these secluded women acquire Hartani women to perform their public sphere activities as well as private obligatory services at the household level.

going to the palmeraie. Once the thieves are caught, they are assigned a number of man and beast days of labor they must furnish, and they are accompanied by the Water Guard to supervise them. Water cheating and stealing produce from the palmeraie are the two major sources of labor in normal times. The water guard and the palmeraie guard are paid in kind for their community service, besides their prestigious position in the *taqbilt* circle, they are entitled to the tithe of the harvest delivered to them on the day of *'id al-Fitr* (the day of breaking the fast).

In the *mulk* system, the poor and landless must provide labor even if they do not own irrigated land. Although, using the communal banks of the river and the canals for gathering grass is prohibited, the participation of the poor and landless in the maintenance of the system is justified on the grounds of communal membership. Given the strong emphasis on the elements of *umma* (sacred Islamic Community) ethics and preaching in the village, one might suggest that this mobilization of the landless labor, be they sharecroppers or not, is justified through their belonging to the community of believers; however, despite Islam's stands on racial and tribal cooperation and mutual aid, exploitation of the poor in this context could only be understood through the matrix of resource scarcities embedded in the ethnic and religious makeup of the community. Thus, small-scale irrigation in the *mulk* system coupled with the *baraka* of Shurfa and the power of the Ait Khabash have created inequalities among the different social groups of the community.

As discussed above, the exploitation of collective labor for communal property mediated through the instruments of power and religious thought facilitated and articulated the entrance and exit of the Berber nomadic mode of production and the hammering of the religious sedentary subsistence mode into the shape taken by the local relations of production (i.e. sharecropping). Besides, one might suggest that demographic pressure embedded in risky environment not only led the nomads to adapt part-time pastoralism or revolving sedentary

demi-households but also helped in establishing an alliance with the religious sedentary elite resulting in the subordination of the low classes. These processes of ecological exiting and reentering the villages coupled with the Arabs' monopoly of *baraka* succeeded in the recruitment of a subservient clientele to be used and exploited in both prosperous and stressful times by the Berbers and the Arabs alike (Barth 1956 and 1973; Park 1992).

Capitalizing on their symbolic/ideological and physical/force reservoirs, the Arabs and the Berbers have succeeded in converting their symbolic and material capital into a sound portfolio of material capital. Bourdieu, though focusing on the ethnically homogeneous Kabyl villages in Algeria, is quite right when he argues that, "l'appropriation d'une clientèle, même héritée, suppose tout un travail, indispensable pour établir et entretenir les relations et aussi des investissements importants, tant matériels que symbolique, -qu'il s'agisse de l'assistance politique contre les agressions, vols, offenses ou injures, ou de l'assistance économique, souvent très coûteuse, en particulier en cas de disette" (Bourdieu 1972:237).⁸ It seems clear that property is not only governed or mediated by symbolic social relationships but also subject to intra-community optimization of relationships designed to disguise the extortion of collective labor or corvee- especially when the level of technology and resource management techniques are simple but yet demand communal participation. The combination of symbolic and violent capital legitimized and negotiated through ethnicity and religious ideology entrenched in a risky arid environment succeeds over the long term in naturalizing and reproducing (*habitus*) this process of exploitation of the low classes while also forming "la forme la plus précieuse d'accumulation" in *Blad Siba* (Bourdieu 1972:178, 237-239).

⁸ The appropriation of a clientele, even if it is inherited, presupposes a great deal of manoeuvring and hard work crucial for its establishment and maintenance and involving important material as well as symbolic investments- be it political assistance against aggression, theft, offenses or injuries, or economic assistance, often costly especially in times of stress and vulnerability.

↔ Furthermore, much of the démocratie-témoin ethnographies viewed ecologically leaves hardly any space for factoring in essential elements of the political economy associated with heterogeneous societies of many parts of the developing world, particularly when one is dealing with common property management institutions (CPMI). Taking issue with the functional explanation of the role of CPMI's in general, even if the institutions in question perform the functions ascribed to them, they may have emerged for different reasons. For example, the fact that private or common property use/rights help members coordinate their behavior under the "concejo" or any local governing body does not refute the arguments of Marx or even Rousseau that they were invented by people who sought to advance or exploit others rather than to cooperate with them. Moreover, functionalist explanations do not rigorously demonstrate either that existing institutions had to emerge or that institutions that failed to emerge could have been weak or inferior.

The crucial point is that these arguments do not consider whether alternative institutions could have performed as well or better. From this standpoint, the danger lurking behind functional analysis is the fallacy that institutions cannot be divorced from their adaptation to the environment. Besides, institutions may be interpreted as having arisen because of the functions they must have served, when they in reality appeared for purely speculative and/or imposed reasons.

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Water Rights as Rules:

Ethnographies of Moroccan rural communities, be they nomad or peasant, are replete with rules and mechanisms involved in governing the commons and keeping society at bay from chaos and disorder (Gellner 1969; Hart 1980,1984, and 1976; Hammoudi 1985; Leveau 1985; Mahdi 1986; Norvelle 1988; see also Rosen 1985 for a useful comparison). Hammoudi, in his non-materialist and symbolic analysis of water rights in the Dra'a Valley, sums up his article stating that water rights are nothing but a negotiated relationship between the members of the community. He argues that, "all he [an irrigator] has in his hands -as distinct from a subsistence- is a relationship that is evaluated in relation to other users over time. By means of an irrigation network, itself the product of joint labor, this relationship permits him to obtain water to irrigate his lands" (1985:52). Moreover, Mahdi goes on to replicate Hammoudi's conclusion in the analysis of water rights among the Berbers of the Western High Atlas mountains arguing that in, "Erguita water rights would fall into the category of "collective regime", where [an] individual-rights-holder has his share of water because of his membership in a particular group", and concludes that "water rights, then, are best understood through the rules that govern the division and distribution of water" (1986:188). For Mahdi common property is beneficial to the community and he strongly states that, "collective irrigation creates a kind of equality among users and is an efficient form of water management" (1986:194). Perhaps it is in his localized analysis, but Mahdi never discusses inequality among the different "fractions" (clans) of the village and how labor is mobilized for the upkeep of the system.

It is, indeed, surprising that both authors seem to have neglected a full investigation of the historical ecology, for one reason or another, that resulted in these bundles of water rules and laws, especially when they are dealing with communities that subsisted for the most part of their existence in *Blad Siba* (rural hinterlands that escaped the state's control until the first half

of the 20th century as opposed to *Blad al-Makhzan* or government presence). This paper, however, suggests that water rights are not and were not a bunch of rules based on individual consent but rather instruments of power and expressions of ethnicity, power, and religious interpretation. These so-called water rights or rules are nothing but a product of a long process of ecological and power and social relations histories that revolved and evolved around communal everyday activities.

To apply the concept of property law or "water rights as rules" to the *Blad Siba* communities introduces a great deal of confusion and a misleading interpretation of the ethnic and ideological dynamics of reality as it was. Leveau, in his evolutionary reconstruction of property law in pre- and post-colonial Morocco, is quite correct when he argues that private ownership of the means of production did not take root in Morocco until the imperialistic onslaught in the 19th century; and private ownership in the Western meaning was confined to the urban coastal towns where Moroccan nationals (*tujar Sultan*) were protected by foreign interest groups (Leveau 1985:61-68; Kenbib 1990:15; Schroeter 1988). For the rest of the country Islamic rights of property use dominated and land and water were held in Islamic Trusts controlled by the Sultan. Under the *habous* system or *waqf* as it is known elsewhere, land was leased and a cultivator has only the right of usufruct. This practice deterred the emergence of a rural aristocracy that could potentially challenge the sovereignty of the state and at the same time was used as means to control the rebellious areas of *Blad Siba* (i.e. through tax farming as in the *iltizam* and *mir* systems in other parts of the Middle East).

Ostrom, in *Governing the Commons*, identifies at least eight design principles associated with long-enduring community pool resources: (1) defined boundaries, (2) congruence between rules and local conditions, (3) collective-choice arrangements, (4) monitoring mechanisms, (5) graduated sanctions, (6) conflict-resolution channels, (7) government recognition of rights, and

(8) nested enterprises. According to Ostrom these conditions, though speculative, are the factors that have contributed to the robustness and sustainability of common property over time and space (1990:90). Although, she factors out the varying variables of ethnic and power differentials in her CPR model, the real problem is that these frozen factors are at the heart of contested everyday life struggle in many communities throughout the developing world.

Measuring the Amelkis village against these eight design conditions associated with common property, we find that the village fails rules 2, 3, and 7. The village does not meet the conditions of rule number 2 in that there is no congruence between appropriation of water and ownership of land. There is no collective choice as rule number 3 suggests and water rights here are not undergoing any modification, but rather they are frozen and reinforced by ethnicity and power. Water rights are not rules as in the Roman Canon Law but instruments of power and ideology. Members of the village, especially the Haratine, can not influence the rules at the operational level let alone amend them. Rule number 7 does not apply either since we are dealing here with an area that had lived in *Blad Siba* for most of its formative history, however, the arrival of the nomads challenged the land tenure system and helped to devise new ones suitable to its ecological concerns.

One of the essential claims of this paper is that sustainable and robust long enduring common property institutions can also exist in conflict-ridden and exploitation based communities and that rules as understood in the West can not be applied to understand some components of common property management in the developing world. The situation of the Ziz Valley, firmly rooted as it is in the exploitation of the Haratine and others' labor, clearly meets the criterion of sustainable and robust common property institutions. In the village of Zaouit Amelkis where the *mulk* land tenure system is dominant, water is attached to land and the way that water is distributed and monopolized reflects the inequality of land distribution. The "laissez-faire"

characteristic of the Berber nomads and their domination of the system and the control of the upper canal and upper river lands illustrate their power in the management of the marginal resources.

At the village level, water sharing is undemocratic and extremely unequal due to the strategic location of the lands of the Berbers and the Arabs vis-à-vis the irrigation system.

Corresponding to this local inequality of access are the disparities among the different social classes. Among the villages, Zaouit Amelkis enjoys more days of water distribution than any

other village in the area. The name of Zaouit Amelkis invokes the thought that a *zawiya* or an "Islamic Brotherhood" existed in the village. However, there is no trace of such a religious movement today and although the *zawiya* could have been destroyed by the Berbers in the early nineteenth century, there is no saint *quba* or shrine in the village that would help establish the historical existence of such an entity.

The village is not believed to have been built or founded by a holy man either. Analyzing the hierarchical order of the community, the Haratine, who once paid tribute in kind for protection, are at the bottom of the social structure and the Berbers and the Arabs at the top of it. The Berbers comprise the warrior and political class and the Arabs constitute the religious establishment. In this distinction, the Berbers see themselves as superior to the Arabs. The Shurfa and Murabitin distinguish themselves on the basis of their charisma from different religious figures and establishments. This religious status is maintained by strict rules of social organization. Strict rules of marriage are enforced and Shurfa and Murabitin women and men are forbidden to marry outside of their lineage. As far as the Berbers are concerned, the rules of strict endogamy are applied to the letter of the customary Berber way of life. However, there are some exceptions in the not so distant past to the tradition in the sense that a Berber male may marry a *tismakht* or a black slave woman provided that every fifth wife is black. Taking

Hartani women as wives is totally ruled out and Hartani are not encouraged to marry Berber women.

The association between common property and exploitation is well defined and the vulnerability of the black population is clear. The power of the Berbers and the Arabs is maintained and perpetuated by the inequality of land holdings since water rights and land rights are joined. All things considered, the Berbers and the Arabs not only enjoy the primacy over the allocation of water but the advantage of using the Hartani work force to maintain the upkeep of the water irrigation system. These privileges reflect once again the correlation between water control and the vulnerability of the Haratine population.

Conclusion:

This paper has argued that water distribution in the small-scale irrigation community of Zaouit Amelkis and its neighboring villages paints a complex situation. The history of the region can not be separated from the history of water-control rooted in the local repertoire of agricultural land use. Any student of the history and ecology of the riverine oasis environment is very much aware of the importance these oases attach to the phenomenon of irrigation.

Through time, the dialectics of the ethnic and physical infrastructure, the level of technology, and land use synthesize an irrigation mode of production in its own and proper right. It becomes, indeed, the landscape of the system and the point of reference of the community. Any commotion in either one of the synthesizing factors would lead to a fundamental disturbance of the physical landscape and its ethnicity. Hence changes in land tenure and water rights in association with the concepts of ethnicity and power store a wealth of ecological and historical data of enormous value towards a better understanding of common property.

The case described above appears not to fit the Wittfogelian or Glickian typology of what

an irrigation-based community ought to be or look like. The system of the village of Zaouit Amelkis shares the oasis characteristic of the Yemenite type and shares the inseparability of land and water rights feature associated with the Syrian model. However, it rather combines, at the same time, many properties of the two systems of water distribution discussed by Hammoudi in the Dra'a Valley. Given the local historical dynamics of the region and the importance of ethnicity and religious ideology as the bargaining tools in the distribution of water and land, certainly the village of Amelkis stands as a perfect example of where small-scale irrigation has led the extortion of collective labor for common property maintenance.

To understand the relationship between water distribution and social stratification and vulnerability, first one has to understand the dominant system of ownership, the religious framework, and the ethnic makeup of the particular region the researcher is concerned about (Park 1988:61-63). Hitchcock is right in pointing out "that without reference to the ethnic composition of the region it would be impossible to understand the composition of the land tenure system" (quoted in Wilmsen 1989: 276). Conversely, however, in the village of Amelkis, the irrigation infrastructure embedded in a precarious and limited good environment provides a solid point of entry in mapping out the ethnic distribution of the means of production.

In the context of the Ziz valley, an historical analysis indicates that the area was subject to constant nomadic raids that ended with the expulsion and appropriation of the sedentary population's means of production. This is the case of the Ait Khabash that settled in the village of Zaouit Amelkis. The power of these nomads gave birth to their hegemony over the marginal resources of the oasis composed of limited grazing and irrigated lands. The religious status and charisma of the Shurfa and the Murabitin not only helped them to get the upper hand in the allocation of water but also turned the Haratine into an underclass of corvee labor. The Haratine women worked as domestics in the households of the Arabs and the men and able-

bodied children worked as sharecroppers in the fields. The monopoly over the means of productions by the powerful Berbers and the religious Arab establishment not only appropriated the production surplus of the cultivators but exploited their labor to the limit as well. The exploitation of Haratani labor and appropriation of the surplus by the religious and powerful members of the community generated a polarized community of two extremes with the Berbers and the Arabs on the top and the Haratine at the bottom.

The control of water and allocation of this substance on the basis of ethnicity and religious charisma seems to go beyond the interpretive arguments advanced by many Western scholars. The interpretive approach can not explain the ecological and historical forces behind the functioning of a system and the objectives sought by the members of such a community. Every system has a certain social organization to make sure that the system functions and satisfies the expectations of some and the vulnerability of others.

Social organization presupposes cooperation and resolution of conflict among the members of the community since issues of private and communal property have to be regulated. The maintenance and the perpetuation of the water system is the objective of the well positioned segment of society. The perpetuation of this folk model tends to rely heavily on the sources of power, the use of force, and symbolic power rather than rules and norms of behavior agreed upon by the community. Hence we are led to conclude that common property and not private property becomes, indeed, tragic and damaging to the landless who stand as armies of labor reserves to be mobilized for the upkeep of the irrigation infrastructure; and the concern here is not the problem of the free rider phenomenon but exploitation of the Haratine labor solely based on their social membership in the community and not a function of their share of the means of production. To comprehend the process of change and stratification engendered by the control of water in the arid environment such as the oasis, it is necessary to use an ethnic and

religious approach to sort out the relationship between small-scale irrigation and exploitation and vulnerability rather than the interpretive approach that tends to ignore the historical record of power relationships and, thereby, deny significant units of social analysis their proper place in history.

Acknowledgements:

A version of this paper was presented at the Social Science Research Council Workshop on the Study of Political Economy Methods in the Middle East (Berkeley, February 1994) and I am grateful to workshop participants for their valuable comments. Research and writing of this paper was made possible by a grant from the USAID (1991) and the generous assistance of the Institut Agronomique et Vétérinaire Hassan II (IAV) and the Tafilalet Office Regional de Mise en Valeur Agricole (ORMVAT). Particularly, I would like to express my gratitude to Dr. Thomas Park for helping me put this paper in perspective. Special thanks also go to Dr. Thomas McGuire and Dr. Robert Netting for their generous time and useful comments on previous drafts. Last but not least, I am indebted to Dr. Charles Stockton for his help and encouragement and thankful to John Welch (graduate student) and Dr. Jonathan Mabry (back then a graduate student) for their suggestions and sustained interest.

References Cited

- Abdellaoui, R.M.
1987 Small-Scale Irrigation Systems in Morocco. In *Public Intervention in Farmer-Managed Irrigation Systems*, edited by IIMI, pp. 165-174. Digana Village, Sri Lanka: IIMI.
- Arnould, E.
1990 Barriers to Sustained Development: Embedded Institutions and Arid Resources Management. *Office of Arid Lands Newsletter* 21:7-13.
- Bagadion, Benjamin U.
1987 Government Intervention in Farmer-Managed Irrigation Systems in the Philippines: How Research Contributed to Improving the Process. In *Public Intervention in Farmer-Managed Irrigation Systems*, edited by International Irrigation Management Institute, pp. 265-275. Digana Village, Sri Lanka: IIMI.
- Barnett, T.
1977 *The Gezira Scheme: An Illusion of Development*. London: Frank Cass.
- Barth, F.
1956 Ecological Relationships of Ethnic Groups in Swat, North Pakistan. *American Anthropologist* 58: 1079-1089.
1973 A General Perspective on Nomad-Sedentary Relations in the Middle East. In *The Desert and the Sown*, edited by C. Nelson, pp. 11-22. Berkeley, Institute for International Studies: University of California Press.
- Berque, J.
1978 *Structures Sociales du Haut-Atlas*. Paris: Presses Universitaires de France.
- Bouderbala, N, J Chiche, A. Herzinni, P. Pascon
1984 *La Question Hydraulique*. Rabat, Morocco: Institut Agronomique et Vétérinaire Hassan II.
- Bourdieu, P.
1972 *Esquisse d'une Théorie de la Pratique: Précédé de Trois Etudes d'Ethnologie Kabyle*. Genève: Librairie Droz.
- Bromley, Daniel (General Editor)
1992 The Commons, Property, and Common Property Regimes. In *Making the Commons Work: Theory, Practice, and Policy*, edited by Daniel Bromley et al., pp. 3-15. San Francisco, CA: ICS Press.
- Caponera, D. A.
1973 *Water Laws in Moslem Countries, Vol. 1. Irrigation and Drainage Paper 20/2*. F.A.O. : Rome.
- Chambers, R.
1988 *Managing Canal Irrigation: Practical Analysis from South Asia*. Cambridge: Cambridge University Press.

Chambers, R.

1989 Editorial Introduction: Vulnerability, Coping, and Policy. *IDS Bulletin* 20 (2): 1-10.

Chiapuris, J. P.

1977 *The Ait Ayash of the Central Atlas: A Study of Social Organization in Morocco*. Doctoral Dissertation, University of Michigan Dept. of Anthropology. An-Arbor: University Microfilms.

Coward, Walter.

1979 Principles of Social Organization in an indigenous Irrigation System. *Human Organization* 38 (1):28-36.

1980 (Editor) *Irrigation and Agricultural Development in Asia*. Ithaca, NY.: Cornell University Press.

Dunn, R.

1972 *Berber Imperialism: the Ait Atta Expansion in Southeast Morocco*. In *Arabs and Berbers: From Tribe to Nation in North Africa*, edited by E. Gellner and C. Micaud, pp. 85-107.

Lexington, Mass: D.C. Heath and Co.

1977 *Resistance in the Desert*. Madison, Wisconsin: University of Wisconsin Press.

Geertz, C.

1972 The Wet and the Dry: Traditional Irrigation in Bali and Morocco. *Human Ecology* 1(1):23-29.

Gellner, Ernest

1969 *The Saints of the Atlas*. Chicago: Chicago University Press.

Glick, T.

1970 *Irrigation and Society in Medieval Valencia*. Cambridge, Mass: Cambridge University Press.

Groenfeldt, D., and J. L. Moock (Editors)

1989 *Social Science Perspectives on Managing Agricultural Technology*. Colombo, Sri Lanka: IIMI.

Hammoudi, A.

1985 *Substance and Relation: Water Rights and Water Distribution in the Dra'a Valley*. In *Property, Social Structure and Law in the Modern Middle East*, edited by A. Mayer, pp. 27-57. Albany, New York: State University of New York Press.

Hardin, Garrett

1968 *The Tragedy of the Commons*. *Science* 162:1243-1248.

Hart, D. M.

1976 *The Ait Waryaghar of the Moroccan Rif: An Ethnography and History*. Tucson, Arizona: University of Arizona Press.

1980 *Dadda Atta and his Forty Grandsons: The Socio-Political Organization of the Ait Atta of Southern Morocco*. Cambridge, England: Menas Press Ltd.

1984. *The Ait Atta of Southern Morocco*. Cambridge, England: Menas Press Ltd.

Hopkins, N.

1990 Water-User Associations in Rural Central Tunisia. In *Anthropology and Development in North Africa and the Middle East*, edited by Muneera Salem-Murdock and Michael Horowitz, With Monica Sella, pp. 74-94. Boulder, CO.: Westview Press.

Hunt, Robert C.

1986 Irrigation in Egypt: Common Property Management. In *Proceedings of the Conference on Common Property Resource Management*. Washington, D.C.: National Academy Press.

1989 Appropriate Social Organization? Water User Associations in Bureaucratic Canal Irrigation Systems. *Human Organization* 48(1):79-90.

Ibn Khaldun

1958 *The Muqadimah: An Introduction to History*, Vol. 1. (Translated from the Arabic by Frantz Rosenthol). New York: The Bollingen Foundation.

Ilahiane, H. , Mabry, J., and Welch, J.

1991 Rapid Rural Appraisal of Moroccan Irrigation Systems: Methodological Lessons from the Pre-Sahara. Report submitted to USAID/Rabat.

Jamous, R.

1981 *Honneur et Baraka: Les Structures Sociales Traditionnelles dans le Rif*. Cambridge: Cambridge University Press.

Kenbib, Mohamed

1990 Changing Aspects of State and Society in 19th Century Morocco. In *The Moroccan State in Historical Perspectives, 1850-1985*, edited by A. Doumou, pp. 11-27. Dakar, Senegal: CORDESRIA.

Lees, Susan H.

1974 The State's Use of Irrigation in Changing Peasant Society. In *Irrigation's Impact on Society*, Anthropological Papers of the University of Arizona No. 25, edited by Theodore Downing and McGuire Gibson, pp. 123-128. Tucson, AZ.: University of Arizona Press.

Lenton, Roberto

1987 Preface. In *Public Intervention in Farmer-Managed Irrigation Systems*, edited by IIMI, pp. 11-11. Digana Village, Sri Lanka: International Irrigation Management Institute.

Leveau, Remy

1985 Public Property and Control of Property Rights: Their Effects on Social Structure in Morocco. In *Property, Social Structure and Law in the Modern Middle East*, edited by A. Mayer, pp. 61-82. Albany, New York: State University of New York Press.

Lévi-Strauss, C.

1953 Social Structure. In *Anthropology Today*, edited by A. L. Kroeber. Chicago: University of Chicago Press.

Mahdi, Mohamed

1986 Private Rights and Collective Management of Water in a High Atlas Berber Tribe. In Proceedings of the conference on Common Property Resource Management, pp. 182-197. Washington, D.C.: National Academy Press.

Martin, Edward, and Robert Yoder

1987 Institutions for Irrigation Management in Farmer-Managed Systems: Examples From the Hills of Nepal. International Irrigation Management Institute Research Paper No. 5. Digana Village, Sri Lanka: IIMI.

McCay, Bonnie J., and James Acheson (eds.)

1987 Human Ecology of the Commons. In the Question of the Commons: The Culture and Ecology of Communal Resources, pp. 1-34. Tucson, Arizona: University of Arizona Press.

Mendes, L.

1988 Private and Communal Land Tenure in Morocco's Western High Atlas Mountains: Complements, Not Ideological Opposites. Pastoral Development Network Paper 26a. London: Overseas Development Institute.

Mezzine, L.

1987 Le Tafilalet: Contribution à l'Histoire du Maroc aux XVII et XVIII Siècles. Rabat, Morocco: Publications de la Faculté des Lettres et des Sciences Humaines.

Miller, J.

1984 Imlil: A Moroccan Mountain Community in Change. Boulder and London: Westview Press.

Nadir, Marouf

1980 Lecture de l'Espace Oasien. Paris: Sindbad.

Netting, Robert

1981 Balancing on an Alp: Ecological Change and Continuity in a Swiss Mountain Community. Cambridge: Cambridge University Press.

1993 Smallholders, Householders: Farm Families and the Ecology of Intensive, Sustainable Agriculture. Palo Alto: Stanford University Press.

Norvelle, Michael E.

1988 The Development of Water Law in the Arid Lands of the Middle East and the United States: A Comparative Study. In Arid Lands Today and Tomorrow, edited by Emily E. Whitehead, Charles F. Hutchinson, Barbara N. Timmermann, and Robert G. Varady, pp. 289-303. Boulder: Westview Press.

O.R.M.V.A.T.

1991 Annual Report. Errachidia, Morocco: Centre de Mise en Valeur Agricole.

Ostrom, E.

1990 Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press.

- Ostrom, E.
1992 *Crafting Institutions for Self-Governing Irrigation Systems*. San Francisco: ICS Press.
- Park, T.
1988 Indigenous Responses to Economic Development in Mauritania. *Urban Anthropology* 17 (1):53-74.
1992 Early Trends toward Class Stratification: Chaos, Common Property, and Flood Recession Agriculture. *American Anthropologist* 94:90-117.
1993 (Editor) *Risk and Land Tenure in Arid Lands: The Political Ecology of Development in the Senegal River Basin*. Tucson: University of Arizona Press.
- Rosen, L.
1985 *The Anthropology of Justice: Law as Culture in Islamic Society*. Cambridge: Cambridge University Press.
- Runge, C. Ford
1984 The Fallacy of Privatization. *Journal of Contemporary Studies* 7:3-17.
- Schroeter, D.
1988 *Merchants of Essaouira: Urban Society and Imperialism in Southwestern Morocco, 1844-1886*. Cambridge: Cambridge University Press.
- Scudder, T. and E. Colson
1987 The Kariba Dam Project: Resettlement and Local Initiative. In *Technology and Social Change*, edited by R. Bernard and P. Pelto, pp. 42-71. Prospect Heights, IL: Waveland Press.
- Siy, Robert Jr.
1987 Averting the Bureaucratization of a Community-Managed Resource: the Case of the Zanjeras. In *Public Intervention in Farmer-Managed Irrigation Systems*, edited by IIMI, pp. 35-47. Digana Village, Sri Lanka: International Irrigation Management Institute.
- Tang, S. Y.
1992 *Institutions and Collective Action: Self-Governance in Irrigation*. San Francisco: ICS Press.
- Wade, Robert
1988 *Village Republics: Economic Conditions for Collective Action in South India*. Cambridge: Cambridge University Press.
- Watson, A.
1981 A Medieval Green Revolution: New Crops and Farming Techniques in the Early Islamic World. In *The Islamic Middle East, 700-1900: Studies and Social History*, A. Udovitch (ed.), pp. 29-58. Princeton, NJ: Darwin Press.
- Wilmsen, E.
1989 *Land Filled with Flies: A Political Economy of the Kalahari*. Chicago: University of Chicago Press.

Wittfogel, Karl
1957 *Oriental Despotism: A Comparative Study of Total Power*. New haven, CT: Yale
University Press.