

Curent situation future patrimonializing perspectives for the governance of agro-pastoral resources in the Ait Ikis transhumants of the High Atlas (Morocco)

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THE GOVERNANCE OF RANGELANDS

Collective action for sustainable pastoralism

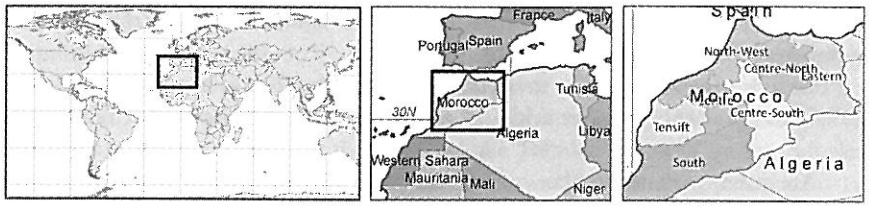


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Jonathan Davies and Pablo Manzano Baena

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7 Current situation and future patrimonializing perspectives for the governance of agro-pastoral resources in the Ait Ikis transhumants of the High Atlas (Morocco)

Pablo Domínguez



Briefing

Even if there is growing scientific evidence that Indigenous and Community Conserved Areas (ICCAs) created locally in specific cultural and ecological contexts are a positive management regime for the well-being of local populations and the conservation of the environment, in fact ICCAs are being strongly undermined worldwide. This chapter deals with this problem by focusing on a particular agro-pastoral ICCA in Morocco, the *agdal*. More concretely I will focus on the system of *tagdalts* (small *agdals*) of the Ait Ikis community, which consists of regulating seasonally the utilization of highland rangelands and agriculture through an assembly of users whose objective is to ensure a sustained use and egalitarian access to natural resources. As one of the key drivers of the undergoing *agdal* crisis in the Ait Ikis, I point to important shortcomings in the exchange interface between science and politics which imply the undervaluing of *agdals*. One of the ways for the necessary implication of the decision-makers and politicians that affect the socio-environmental problems of these systems could be the processes of patrimonialization, which seek to give a clear and public recognition to the natural and cultural values of these socio-ecological systems at a local, national and international level.

Keywords: governance, rangelands, patrimonialization, ICCAs, mountain, Morocco

Introduction

The alliance between the natural and social sciences has proven to be a worldwide successful analytical approach to understand and conserve ecosystems while seeing humans as a key agent within these (1971 Program Man and the Biosphere Program, 1972 Stockholm Declaration, 1992 Rio Conference). Consequently, authors from various areas of expertise have stressed the importance of Indigenous Peoples' and Community Conserved Territories and Areas, hereafter ICCAs (in the meaning given by Kothari *et al.*, 2012), vis-à-vis local communities' livelihoods, their socio-ecological resilience and the conservation of biodiversity (Agrawal, 2003; Baland and Platteau, 1999; Berkes, 2004; Auclair and Al Ifriqui, 2012; Gellner, 1969; Ostrom, 1990; Porter-Bolland *et al.*, 2012). It is well known that bottom-up approaches contribute to such goals (West *et al.*, 2006), and analysts have highlighted the need to integrate ICCAs into strategies of global environmental conservation and human development (Corrigan and Granziera, 2010). In fact, they have demonstrated ICCAs to be central in ensuring the well-being of millions of people and the conservation of about one-third of the global ecosystems (terrestrial and aquatic), which remain adaptable and highly resilient to various socio-ecological threats, for instance climate change, agro-business expansion or desertification (IUCN, 2012a). Nevertheless, ICCAs should not be regarded either as a universal panacea for conservation, nor as a strict developmental regime, because there are cases where ICCAs were unsuccessful (Ruiz-Mallen and Corbera, 2013). In an increasingly globalizing world, however, it has become obvious that multilevel participatory governance, which should combine local and state-level agencies, may secure a seamless connection between different actors and institutions. This seems to be the necessary approach in the future success of ICCAs (Berkes, 2007).

At the same time, the link between pastoralism and environmental degradation has been the source of fierce debate among researchers. Pastoralists are typically accused of degrading vegetation cover and causing desertification worldwide (Geist and Lambin, 2004: 818). Nevertheless, while this may be the case in many situations of unregulated rangelands, numerous studies have argued the reverse where institutions of community-based management of natural resources are well established (McCabe, 1990: 82; Banks *et al.*, 2003: 135). More importantly for this study, grazing has proved to be actively managed by local communities to relieve pressure on pastoral resources and to sustain forage production for the benefit of the communities themselves (Genin *et al.*, 2012: 412).

Despite such growing acknowledgements of ICCAs and pastoralism within scholarly circles and more than two decades of rising awareness from civil groups as well as interest within certain local administrations and international organizations, today pastoral ICCAs and the bio-cultural diversity they promote continue to experience a rapid process of degradation, particularly under the rules of the world's market system and forces of globalization (Jodha, 1985). It can be argued that on the basis of these processes of decline is a strong communication gap in the science-policy interface, which in effect encourages the undervaluing and

undermining of ICCAs (Domínguez, 2010). Without appropriate intermediation and evaluation between these systems and state institutions, the facts established by scientists are too often translated by decision-makers into doubts and used as excuses to avoid action (Aumeeruddy-Thomas, 2013; Swyngedouw, 2010).

One of the ways to implicate decision-makers genuinely in the current socio-ecological problems of pastoral ICCAs is through *patrimonialization* procedures (Michon *et al.*, 2012; Auclair *et al.*, 2011. The concept of patrimony (heritage) is defined here as a set of tangible and intangible cultural and natural elements inherited from the past and focused on a stakeholder (an individual or a community), that helps to sustain the stakeholder while developing its identity and autonomy through adaptation in time and space (Ollagnon, 2000). Patrimonialization is thus regarded as a process through which these inherited but evolving natural and cultural values may be acknowledged at local, national and international levels (Cormier-Salem *et al.*, 2002).

To contribute to the better understanding of pastoralism and ICCAs under such an approach, this chapter will explore new patrimonial values of a set of agro-pastoral *agdals*. The *agdal* is the most paradigmatic case of ICCAs in Morocco. It can be defined as a seasonal prohibition that forbids access to an agro/sylvo/pastoral resources in order to allow them a resting period during their most sensitive period of growth (for example the three months of spring in the case of high mountain pastures). The spaces, dates and resources affected by this prohibition, as well as the processes by which they are established and applied, are enforced by the tribal assembly (*jmaa*) according to its own history, territorial heritage, political structure and economic strategies. Hence, while seeking to optimize the productivity of the resources, the *agdal* management system also assures the community of users a relatively fair access to local natural resources as all members of the community have equal rights to the common pool and together comprise its governance. More concretely, the chapter will look at the *tagdalts* (small *agdals*) of the Ait Ikis, a community of approximately 700 members belonging to the Mesioua tribe in the High Atlas of Marrakech (Morocco) where I have concentrated my researches during the last decade.

The hypothesis underlying this analysis is that the described patrimonial approach can contribute significantly to solve the current problems that Moroccan agro-pastoral ICCAs are facing and hence, the main goals of this chapter are:

1 To record and identify new natural and cultural patrimonial values of the Ait Ikis ICCAs.
2 To examine the opportunities of managing such values in the context of a patrimonializing procedure.

In order to undertake this new global analysis, I have completely reviewed some previous works, including my PhD thesis, to elaborate a new evolved and updated description of the agro-pastoral *agdal* governance system of the Ait Ikis group up to present, and to unveil their hidden patrimonial natural and social values. Second, I will show how the current governance regime interacts with the external world and some of the main causes of its degradation, at the same time as discussing a possible future patrimonializing perspective to face these challenges.

Context of the Ait Ikis agro-pastoral governance system

This study was carried out among the Ait Ikis group, the upland members of the Mesioua tribe (hereafter 'Mount Mesioui'), situated in the Moroccan High Atlas, less than 50km from Marrakesh as the crow flies (Figure 7.1). Like other high mountain areas, it is terraced in an altitudinal vegetation gradient. Between 1,000 and 2,500m, several types of ligneous vegetal structures (scrubs, bushes, and Mediterranean forests) occupy the mountain sides, being especially dense on the north slopes. From 2,500 to 3,600m (the Meltsene peak is the highest point in the region), high mountain plants and rich pastures appear, followed by steppe vegetal structures with a strong presence of cushion-shaped xerophytes, although some thick pastures still remain, combined with some resistant juniper bushes. The humid highland prairies that most importantly attract local agro-pastoralists' attention are in fact one of the rarest vegetal types. They occupy small and very specific biotopes of the high mountain spaces, such as the floors of small valleys, mall faults, the lower slopes or the proximity of water resurgences (Domínguez, 2005; Bellaoui, 1989).

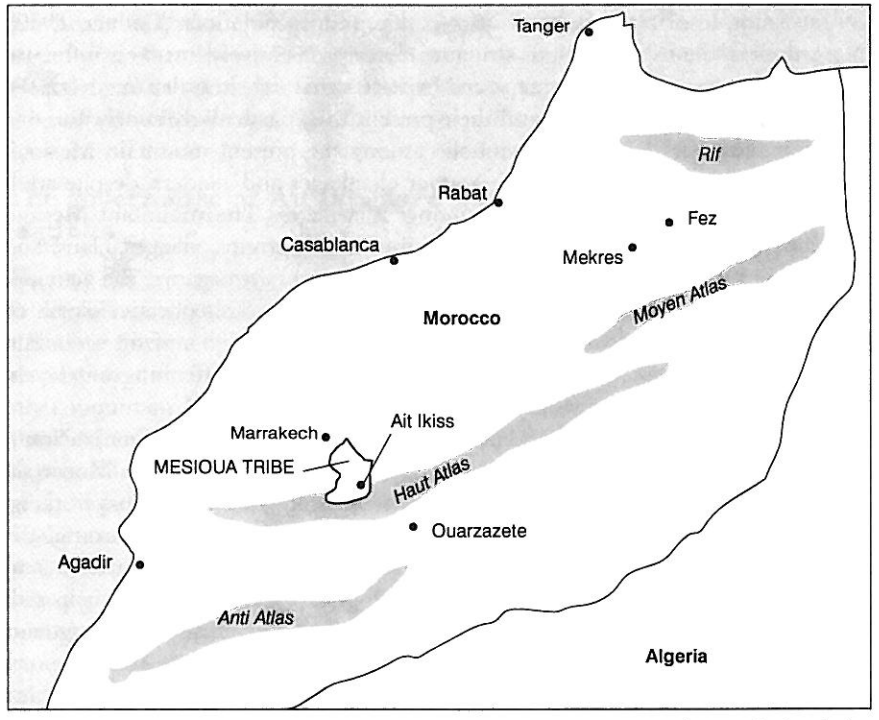


Figure 7.1 Location and borders of the Mesioua tribe with the Ait Ikis population in its interior (source: Domínguez, 2010)

The Yagour, a large territory of about 70km² located at the centre of the Mesioua highlands and on which pastoralism is forbidden by the *agdal* during three months in spring, is at the heart of our study site and hosts the most important fodder resources of Mount Mesioui (Figure 7.4). Nevertheless, the Yagour is just one of several territories in a larger and more complex agro-pastoral system, in which this rangeland is combined with the use of other *agdal* managed territories. Its importance lies in its large size (Yagour means 'bigger than' in the local language), determining the opening dates of many other *agdals* around, which allow access to their pastures before or after the Yagour does. Each year, herding in the Yagour is prohibited by the *agdal* system from approximately 28 March to the end of June/beginning of July, mainly according to the annual rainfall (the higher the annual rainfall the later the start date). These dates on which herding is banned are established every year by an assembly of herders using the Yagour, the locally so-called *jmaa*, that constitutes the most fundamental institution of their autonomous political control. As with the other smaller local *agdals*, the maintenanceof the prohibition of access is overseen by individuals elected by the community of users as guardians, the *Ait Rbain*, who communicate any infraction to the tribal assembly, which applies the appropriate sanction or resolution for each type of infraction.

The different *agdal* prohibitions were traditionally legitimized and supported by long-observed cults of local saints. The descendants of these saints were (and still are, in some cases) considered by locals as saints themselves and used to play a role in governing local resources and inter-ethnic pastoral relations (Gellner, 1969). Nevertheless, the tribal religious structures have progressively lost their influence over long time, and have been replaced by state structures, in order to govern the local populations more easily, and their present role, particularly concerning big *agdals*, is today predominantly symbolic among the present mountain Mesioui. There are about 7,500 users of the Yagour of all ages and genders, despite adult men being prominent, distributed among 40 villages. The mountain Mesioui continue to organize themselves in tribal groups, sub-groups, villages, clans, and nuclear families. These human groups or *segments* generally organize the activities that affect their community through the different *jmaas* (i.e. collective works of a clan, irrigation rules affecting several villages, herding rights of all mountain Mesioui, different *agdals* concerning different resources and different group levels, festivity organizations and religious celebrations, etc.).

The Mesioua tribe members have *Tachelhit* as their mother tongue, a South Moroccan Berber language. Nevertheless, practically all men speak a Moroccan dialect of Arabic, which they learn through television, social relations, working, administrative procedures, and at school which arrived to the area around the 1980s. Nevertheless, since women only learn Arabic through the media and school, they finish their education at an earlier age than men in order to help with domestic work. Women tend to be much less proficient in this second language, especially the oldest among them who never had the chance to attend classes.

In economic terms, approximately up to three-quarters of the local income can come from the agro-pastoral sector, which is usually combined with seasonal emigration or some specialized local works such as masonry, smithing or other

similar occupations (Bellaoui, 1989). Animal-rearing consists mainly of cows, sheep and goats. The mountain Mesioui are patrilineal, and like other Berber societies, all decisions regarding the household use of the agro-pastoral resources are made by the male head of the household, and in his absence, by the eldest adult male of the family (depending on the family situation it may be a brother, the eldest son, etc.).

The importance of the different *agdals* within the local economy is attested through the way in which prohibitions facilitate the regeneration of large quantities of high quality and diverse agro-pastoral resources, which is greatly sought after by farmers during the different periods of scarcity on other lands (e.g. winter in the highlands and summer in the lowlands). For example, in the case of the Ait Ikis on which I will focus most concretely, the contribution of the *agdal* managed summer pasture of the Yagour highlands was estimated at 12 per cent of the overall family income, including migrant remittances, approximately 18 per cent of the overall agro-pastoral income and over 24 per cent of the overall pastoral income (Domínguez, 2010). From this study one can deduce the importance of certain *agdal* managements as they correlate directly with the quantitative importance of the local economic resources that these *agdals* manage. Nevertheless, it is fundamental not to only focus on the quantitative level, but also to analyse the strategic place that *agdals* occupy within the animal food calendar as for example the Yagour's pastures protected by the *agdal* prohibition during the three months of spring are consumed in situ during the summer, a period of the year when the animal food resources of the lower pastures have run out. Indeed, local stockbreeders insist that 'pastoralism and the *agdals* are our means of survival' (Domínguez *et al.*, 2012).

The governance of Ait Ikis agro-pastoral diversity: the tagdalts

The Ait Ikis community occupies four different habitats (Figure 7.2) according to the following altitudinal sequence: Azgour/Tifni, Ikis, Warzazt and Yagour n'Ikis (the portion of the greater Yagour territory that belongs to this group). In proportion to their number, the Ait Ikis use a larger part of the Yagour than the other mountain Mesioui communities. To explain this situation, they refer to a historical or legendary heroic event that entitled them to a larger land area in the Yagour. The diverse and steep topography and the climate variations of Ait Ikis result in periods of scarcity for herds, particularly in summer, as a result of the drought, and partially in winter as a result of the harsh cold and the snow covering most of the high altitude pastures, rendering them physically inaccessible. Thus, these agro-shepherds must think through the use of their territory in terms of time and space, in order to address the food needs of the herds and to ensure enough transfer of fertility through animal manure, to areas under cultivation. To achieve this, they have implemented a complex and fine transhumance system, controlled by the application of different *agdals* (locally called *tagdalts*, small *agdals*) whose rules (particularly people entitled to access them, dates on which access is

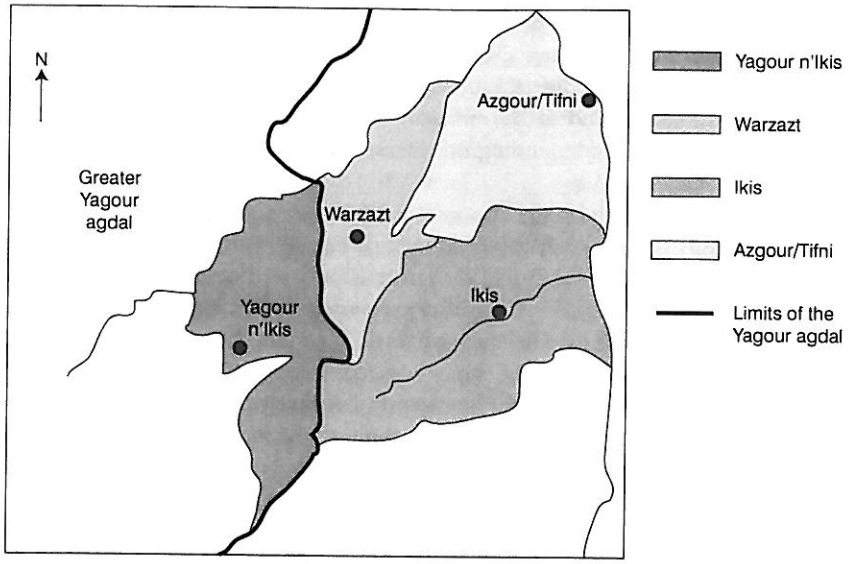


Figure 7.2 Territory of the Ait Ikis and their four habitats (based on Domínguez, 2010)

prohibited, spaces and resources concerned, penalties to be paid by infringers, etc.) are reviewed each year by the *jmaa*, the village assembly.

In this section, I will attempt to highlight the social and natural values, which are implicit in the Ait Ikis territorial governance, permitting them to develop their own identity and autonomy inherited from the past but in constant readaptation, and hence, instituting this system in the category of a socio-ecological patrimony as defined by Ollagnon (2000). I will explain the different prohibition choices governing the rhythm of transhumance of the herds and the movement of the families, paying particular interest to the evolution of fodder, agricultural and fruit resources throughout the year and how this has been changing throughout the last decades. This will enable us to gain a better understanding of this highly dynamic and complex mobile agro-pastoral system. Through a series of explanations, all of which have been updated from my PhD thesis, expanded and newly reformulated for this chapter, I will explain the system of opening and closing of the different *tagdalts* in the four habitats on which the Ait Ikis transhumance is modelled. At the same time I will also show in an expanded manner vis-à-vis my previous works, its strong imbrications within the agricultural and ritual calendars.

From 28 September to 28 March (based on Domínguez, 2010)

On 28 September (15th in the local Julian calendar) the *agdal* prohibitions that are imposed upon the territory of Ikis are strict, meaning that herding as well as the harvesting of walnuts and gathering fruit were forbidden before this date. Until this date, most people were settled in the higher lands of Warzazt, but at the end of September the majority of them transhume with their animals and possessions

back to Ikis. Ikis is in fact the home village of the entire group (the reason why the local group is called Ait Ikis, meaning 'those from Ikis'). It is located at a height of almost 1,700 masl, over 300 metres lower than Warzazt, and geographically speaking it is better protected from the cold winter winds flowing downwards from the highest peaks. People here have better insulated houses made of local granite where they can spend the winter in contrast to the less effective sandstone of Warzazt. It is also here where 90 per cent of the walnut trees of the Ait Ikis grow. In fact, at this altitude walnut trees find their climactic environment within the whole Zat river basin and this is important as walnuts are a key complementary income for the households. They are able to reach relatively high prices in the local market, even equal to the price of barley, and walnuts are even used for bartering while they are being gathered. The arrival of such an important economic event for locals and the fact that it coincides with the return from the summer pastures to the winter habitat, is cause for celebration. The Ait Ikis population make a sacrifice of animals (a *maarouf)* at their oldest settlement, Ikis, and hold a communal meal close to the tomb of the local female saint, Afoud, in her honour. Through this ritual, they make pledges to guarantee a prosperous and safe winter in their lowland habitat where all members of the group work closer together to get through the hard winter. At this point, all spaces of the Ait Ikis are open to herding and throughout autumn and winter the free movement of the animals is permitted in all spaces. Nevertheless, during this period, farmers and shepherds tend to stay more or less within the boundaries of the space they inhabit (Warzazt, Ikis or Azgour). Without major competition for natural resources during this period as all has been collected in advance, the *agdal* prohibitions do not need to be reimposed until spring returns, and there is a chance to compete for higher rates of productivity. Hence, *agdals* can be seen as a cooperative system motivated by individual competition for natural resources in order to avoid collective over-grazing or over-harvesting by free-riders.

From 28 March to approximately 20 April (based on Domínguez, 2010)

On 28 March (the 15th in the local Julian calendar), the entire Yagour including those from Ait Ikis (Yagour n'Ikis in the figure) are under the global tribal herding prohibition of the *agdal* to encourage the growth of pastoral vegetatation. This affects especially the herbaceous ones which, at the end of June, can be more than one metre high in a rainy year in the most favourable soils if the herding prohibition is fully observed. At the same time, during the three months of the herding prohibition, the flowering, pollination and consequent production of seeds that are central to the continuity of these ecosystems are also guaranteed giving an extraordinary aesthetic appearance that attracts an increasingly great number of trekking tourists at this time of the year. One or two hundred shepherds from the whole Mesioua tribe, some of whom are members of the Ait Ikis and use the Yagour at the end of winter (February–March), but only when snow is not present, hence varying from year to year, must leave the Yagour and search

for new spring pastures at lower altitudes. The Yagour is thus emptied of all its users for three months, and generally thought to be occupied by spirits and devils, locally called *djins*, at the service of the different local saints, determined to assure that the *agdal* prohibition is respected. Hence, and even if such beliefs have been in decline for some decades now (Domínguez *et al.*, 2010), it is still generally thought that one is at risk in the Yagour while the *agdal* prohibition is in place, particularly if herding animals. More or less at the same time, another small very particular *agdal* is decreed regarding the herbaceous strips dividing the different agricultural plots, in the 'open' space of Warzazt. Hence, this agdal is not applied in a spatial homogenous manner but in a reticular way, over the different lines dividing private terraces. This prohibition is also applied the presence of the same diabolic spirits described for the Yagour and even if it is considered a more domesticated space, withdrawing grass from the common grass strips between private fields can be equally punished by these supernatural beings.

Approximately from 20 April to 20 May[1] (based on Domínguez, 2010)

At the beginning of spring, on a date based on each year's rainfall and availability of pastoral resources, Warzazt, the second highest settlement of the Ait Ikis, also closes its entire pasture to allow the grass to grow on the slopes and the small plains beyond the cultivated fields. The month of May is in fact, according to the local breeders and shepherds, the most sensitive time for the growth of herbaceous plants in Warzazt. Hence, 20 out of the almost 100 Ait Ikis families whose main home is in Warzazt (especially sheep-breeding families), are obliged to migrate to the valley of Ikis, with the exception of some shepherds who with their animals at the sheepfolds of Tifni (on the road to the hamlet of Azgour). Since it only affects a small part of all Ait Ikis, this movement of people does not seem to inspire major communal ritual celebrations. Nevertheless, it does assure that the barley that is currently growing at its maximal rate on Warzazt's fields, is well protected from possible animal damage. This is especially important for Warzazt field owners living at this time of the year in Ikis and having great difficulty in restricting access to their fields at such a critical period of growth for their crops. Hence, the decision of the Ait Ikis assembly forces 20 families out of Warzazt, assuring both the recovery of the pastures and unproblematic growth of the barley.

Approximately from 20 May to June–July (based on Domínguez, 2010)

After a month, around the 20 May, the space of Warzazt lifts its *agdal* and pasture is open again to herding and living. This creates an inverse migration: people come up from Ikis and Tifni to Warzazt, and even from Azgour, where less than a month later (towards the end of June), the barley harvest begins. The difference between this upward movement and the previous downward one relies not only on the fact that they have opposite directions, but also on the number of people that move. In

fact, in this case, almost all families of the Ait Ikis, nearly 90, move towards higher lands in this transhumance. Also, the two shops in Warzazt that have been closed since September are now open and even the *fqih* moves with the group from Ikis to Warzazt. This movement to the higher lands symbolizes the beginning of the summer for the Ait Ikis and iradiates a general feeling of happiness and joy. It is also the end of the academic year for children and it is always preceded, just a few days before this upward transhumance, by the celebration of another ritual *maarouf* in Ikis again, similar to the one celebrated after their return on 28 September, but this time in the hope of obtaining the blessing of Allah for a good summer in the highlands. Hence, through these two key ritual offerings, one before the winter season and one before the summer season, which included cattle sacrifices but also bags of grain, butter, couscous, and other local products, these products are distributed equally among all members of the community, irrespective of who gave more or less. Symbolically, the most important feature of the ritual is that it is performed before the 'eyes' of the saint and of God, as the saint's tomb is also considered to be a gateway to Allah. The idea is that after having meticulously followed the ritual and proved to the saint and God their piety with the most poor of their community, Allah would reward his devout Muslim observants. After this one-day ritual, the participants, all males of the village, children included, go home calmly confident that they had left the old season behind and entered a safe and hopefully prosperous new season with divine will and protection on their side.

Approximately from June–July to 28 September (based on Domínguez, 2010)

After implementing the *agdal* prohibition on the high altitude territories of Mount Mesioui for approximately three months, the Yagour reopens. This opening occurs earlier or later, again depending on the annual ecological conditions (mainly gross annual rainfall), according to the decision made by the *jmaa* of Mount Mesioui. Nevertheless, today this role is somewhat lifted or bootlegged by the state's intervention who reclaim their new role as referees and pacificators in the place of the saints' descendants that used to be in charge of this. The transhumant shepherds, Ait Ikis and other groups from all the territories bordering the Yagour, move upwards bringing in a great number of herds (up to 45,000 animals according to the numbers estimated in Domínguez 2010) and people (over 7,000 persons including men, women, adults and children). Here many of them meet again after one year's separation and new *maaroufs* and other celebratory events, rituals, sacrifices and even marriages are held at this time. However, in those areas that encourage highland agriculture (for example Warzazt), the *jmaa* also imposes small *agdals* to protect the crop fields, especially since the harvesting of cereals in the Yagour always takes place a few days before its opening. In fact, there is a local rule that states that nobody from the Ait Ikis may enter or cross its territories of Warzazt and Yagour n'Ikis with animals during the three days before the closure of the great *agdal* of Yagour, in order to allow them to harvest all their crops if they are ripe enough, before the remaining local shepherds from other villages have to

cross their own lands to reach the Yagour. Moreover, towards the middle of July, the floor of the Ikis valley is put in *agdal* and people can no longer graze their animals there, neither locals nor people from outside, so that the fruit growing in this area is allowed to fully ripen and not be open to theft of animal damage. Towards the end of July, another *agdal* is imposed on the entire Ikis valley, as a way of reducing pressure on the pastures during the critical summer period. Finally, towards mid-August the cornfields of Warzazt are also submitted to an *agdal* and people can no longer gather freely in the fields, not even in their own lands except when irrigating them. Only every 15 days or so, the cornfield *agdal* at Warzazt and the fruit tree *agdal* at Ikis are lifted to prevent the rotting of certain corncobs and fruits that ripen before these two *agdals* expire, respectively around 15 September and the 28 September, so reaching the end of the cycle and starting a new year.

The agdals in environmental conservation

In terms of conservation output, the *agdal* system has proved to have additional beneficial effects: on first, vegetation cover and second local biodiversity (Hammi *et al.*, 2007; Alaoui-Haroni, 2009; Montes *et al.*, 2005). Analyses of aerial and satellite photographs by Hammi *et al.* (2007) have shown how forest vegetation in the Ait Bougmez persists, or has even increased, since 1964 in areas subjected to *agdal* regulations, whereas in *non-agdal* areas where natural resources are freely harvested, there is a net reduction in vegetal formations. In fact, almost the entire deforested areas in this site (21.5 per cent of the forest surface in 1964), concern only *non-agdal* areas. In addition, Montes *et al.* (2005) have demonstrated how *agdal* management of the Ait Bougmez forests has contributed to the conservation of plant coverage and soils as well as a certain biodiversity in terms of insects. Moreover, in her work, Alaoui-Haroni (2009) has demonstrated the proactive conservation of certain plant species through the *agdal* prohibition, in pastures such as the Oukaimeden, which are close and very similar to Mount Mesioui summer pastures, particularly the Yagour. Like everywhere in the High Atlas, the Mount Mesioui *agdal* areas contain different types of resources, mainly pastoral, but also forest, fruit, and cereal crops, and even concern cemeteries where any extraction of vegetation is strictly forbidden for spiritual reasons (Figure 7.3). These different types of *agdal* generally have more abundant vegetation than surrounding *non-agdal* environments. But most important for biodiversity is that such specialized and differentiated land use patterns (Figure 7.4) – different *agdal* opening dates, different spaces, different kinds of access, different kinds of *agdal* within wider *agdals*, and so on – create an ecological mosaic with different vegetation patches and biodiversity pools throughout the territory, also serving as seed distribution points (Auclair and Al Ifriqui, 2012).

In this context, a parallel botanical study of the Yagour (Domínguez and Hammi, 2010) was undertaken in order to find evidence of the capacities of local pastoralists to conserve their resources through the local governance system. This study consisted of comparing sites grazed by a similar number of livestock (same pastoral pressure) but subjected to different human uses following a degree of



Figure 7.3 Ait Inzal cemetery under agdal prohibition with an obvious result on the herbaceous and Juniperus oxycedrus (pool of biodiversity and seed distribution point) (based on Domínguez, 2010)

intensity in the application of the *agdal* prohibition from areas with more human pressure to areas with less human pressure, always within the *agdal* of Yagour. Moreover, these sites following the gradient of anthropic pressure also coincide with another degree, from the most 'peripheral' site of the *agdal* just beside the boundary (Assagoul, shown by a dotted line in in Figure 7.5) to the most 'central' site (Zguigui, shown by a continuous line in Figure 7.5), via another intermediary site (Tamadout, shown by a broken line in Figure 7.5).

The central area of the Yagour (Zguigui) reflects the most traditional *agdal* model, in which the shepherds' permanent housing is far from their pastures, generally more than half a day's walk. Hence, this area is only used for traditional pastoralism, no agriculture is present and it remains uninhabited for approximately six months of the year: the three months usually covered by snow and the three months comprising the *agdal* prohibition, which is largely respected in this case because of the aforementioned distance problem. The 'peripheral' area (Assagoul) reflects the least traditional *agdal* model, in which combined agro-pastoral and semi-sedentary uses have been increasing for the last half century or more. Moreover, in Assagoul the shepherds' permanent housing is very close (just a 30-minute walk away). But, this situation is associated with the fact that the *agdal* prohibition imposed over the whole mountain Mesioui is easier to break, and the area can be more frequently used because shepherds can quickly go up and down every day when there is no snow and no watchmen from other tribal segments. Breaching the *agdal* grazing prohibition under these conditions is easier, as well as the fact that their use of this part of the Yagour is more frequent due

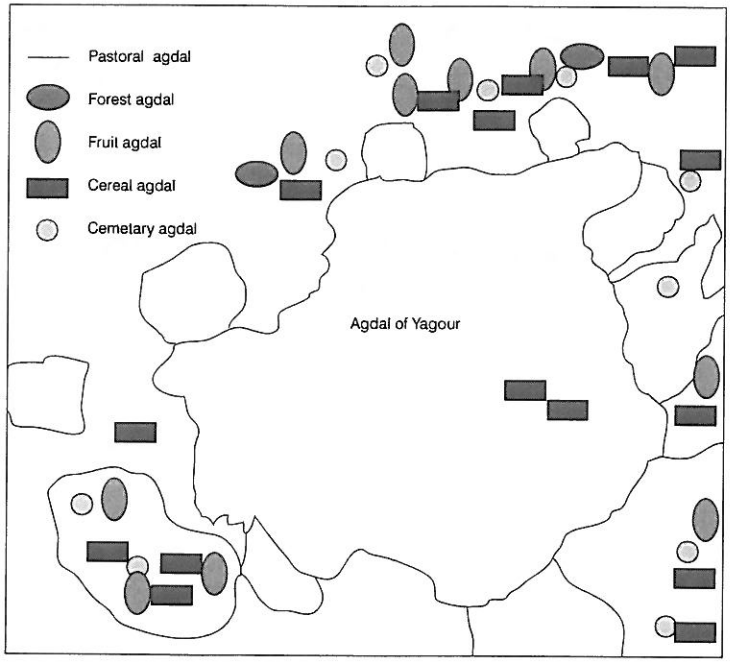


Figure 7.4 Schematized map of the different mountain Mesioui agdals including the big central Yagour agdal, the whole comprising a biodiversity pool and a seed distribution point depending on their different uses (based on Domínguez, 2010)

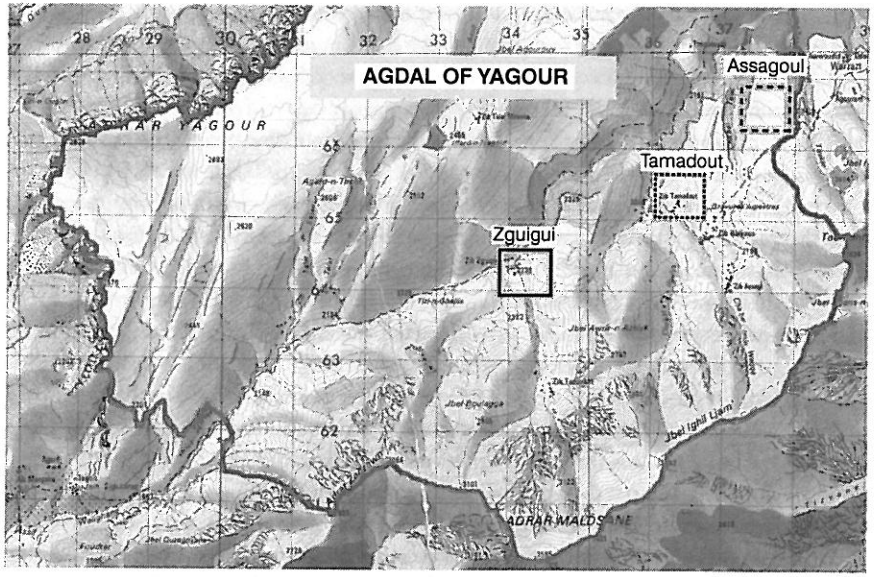


Figure 7.5 Map with the three study sites: Assagoul, Tamadout and Zguigui. The border Yagour's agdal border is indicated by a thick line (based on Domínguez, 2010)

to its proximity to the relatively recently settled village of Warzazt (in the last five decades its quasi-sedentary population has constantly increased). At the intermediary site (Tamadout), agro-pastoralism is already well established, but the sedentarization process is not as advanced as in Assagoul-Warzazt. Here the shepherds' permanent housing is still relatively remote (for some almost a four-hour walk). No agro-shepherds stay all year, especially during the winter, and they stay only sporadically during the *agdal* prohibition period.

Data were collected by analysing in two subsequent years (2005 and 2006) series of three plots measuring $9m^2$ per site, thus making nine plots per year (three plots times three sites) and 18 plots over the two years. The three plots in each site were distributed along a gradient from 'humid' areas (generally the lowest points of each site), to 'intermediary' and 'dry' areas (generally the highest points of each site) within the most fertile lands of the Yagour (mainly the sedimentary micro-plateaus at around 2,100 m). I reveal here the data collected from the three sites which were taken at approximately similar altitudes, gradients and orientations. Hammi pre-identified many of the different species of plants in the field. This was the most practical way to organize the samples in the different plots because it was necessary to distinguish these from the non-recognized species that were later identified in the laboratory (Plant Ecology Laboratory at the Cadi Ayad University, Marrakech).

As a result, these three sites within the *agdal* of Yagour demonstrated to be the reservoir of 117 species and 24 different families that were identified within its most fertile lands. At the most central site with the most traditional *agdal* management system (Zguigui), there were 66 species and 21 families identified, while at the most peripheral site with the least traditional *agdal* management system (Assagoul), there were only 54 species and 16 families. Thus, the hypothesis of the most traditional *agdal* as a better conserver of the pastoral environment appears to be initially corroborated by these results. Not only erosion seems lighter on site in this more traditionally *agdal* managed part of the Yagour, but a tendency towards greater botanical diversity is indicated by these numerical data as we move from the more 'modern' to the more 'traditional' *agdal* management. This hypothesis is also validated by the intermediary site, since 64 species were found in Tamadout, showing greater species diversity than at Assagoul and less than at Zguigui, the two 'extremes' in terms of the number of species and management types. At a family level, it presents 17 families, one more than Assagoul (16), and a much lower number of families than the most traditional *agdal* management area with 21 families (Figure 7.6).

Discussion on the challenges and future patrimonializing perspectives for local agdal rangeland governance

In this part, I will focus on the strong transformations and challenges that the system that I have described is undergoing as a whole and will discuss the possible future attempts to overcome these from the point of view of patrimonialization procedures. I will do so through the concrete analysis of the Ait Ikis community

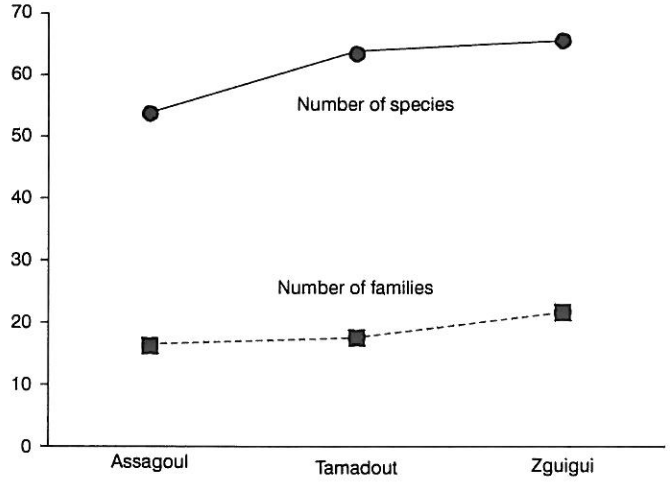


Figure 7.6 Number of species and families at each of the three sites in the Yagour used to measure botanical diversity (based on Domínguez, 2010)

which I have studied most in depth. Starting from agricultural expansion observations, Demay (2004) as well as Domínguez and Hammi (2010) noted seasonal over-grazing on the flatter lands of the Ait Ikis part of the Yagour, the most peripheral one under the great *agdal*. This is mainly due to the gradual spread of mono-specific cereal fields (mainly barley but also wheat) over the richest high mountain pastures, leaving increasingly less land for pastoral species and hence for herding activity. This derives, especially in years of drought, from a premature opening of the Ait Ikis' small surrounding *agdals*[2] or diminished observance of the great *agdal* of Yagour, often encouraging the invasion of other villages' neighbouring rangelands. Therefore, at present there are strong tensions, between villages and particularly between the richest agro-shepherds and the rest of the Ait Ikis people, since everyone is finding it difficult to meet the food requirements of their own herds and families. However, these difficulties are being lived in different degrees depending on each social class. In fact, only the most important landowners, who generally have more livestock and consequently make the most of the available fodder if the prohibition is lifted early. They make a greater profit from these earlier openings and thus, they push for them. Therefore, the smaller owners (however the majority) generally vigorously oppose the intentions of the higher class. Thus, as is evident from from different life stories and tensions regarding the transhumace rules, and based on the *agdals'* governance and the access to pastoral resources seems to be much more vigorous now than in the last hundred years (Domínguez, 2010).

An apparent intensification of droughts in the last decades, perhaps due to climate change, as well as a rise in demography, has further fuelled these tensions. Nowadays agricultural production is locally said to be always more reliable than pastoralism in a year with scarce rainfall. But one of the main

explanations of this cereal field expansion and the consequent *agdal* crises is the improvement in livestock of recent decades implemented by the central state, which together with investments from emigration, also relatively recent and linked to the globalization of economy, are putting much pressure on the old governance system of the Ait Ikis. Even certain sheep-breeders are beginning not to move seasonally but put their livestock in permanent sheepfolds at the Yagour. In fact, since the 1960s, some Ait Ikis inhabitants migrated to France, mainly to work in the coal mines of coal and iron foundries of the north, saving enough money to quickly become a new local elite who started investing in agro-pastoral activity and innovation as soon as they returned. This change in the social hierarchy coincided with the improvement of sheep breeds promoted by the Moroccan state. A selected breed, the Sardi, was introduced into the region and today, even the sheep that intensely transhume with the Ait Ikis have been crossed with it. This breed is more productive when it is in a restricted space and well-nourished with grain, but unsuitable because of its slow gait and constant stalling for transhumance, the traditional way of production so linked to *agdal* management. Thus, large areas of pasture, once believed by most locals to be protected and preserved by local saints, are now being used for intensive agriculture to feed the Sardi sheep, which as we have seen, if fattened up with grain, they fetch a higher market price than the free-range Beldi breed (Demay, 2004). This is possible thanks to the expanding demand for red meat for the growing tourist industry of neighbouring Marrakesh. This causes negative ecological and socio-economic consequences such as the loss of pastures and their consequent soil loss, as well as increasing socio-economic inequalities within the local community (Domínguez, 2010).

In fact, it is no coincidence that once this breed of sheep was introduced, and that cheap wheat flour coming from the industrialized plains of the Haouz province for bread consumption was being increasingly subsidized by the central state, the production of barley was boosted on the lands of the Yagour, as human feeding was no longer the problem and feeding the newly introduced Sardi brought about higher incomes. Hence, using the savings that these emigrants had accumulated, the new elite was able to hire local labour and in buy mules and agricultural machinery. This was done in order to further work on the new lands of the Yagour, with the crops now serving mainly to feed Sardi of the higher social class rather than the rest of the people. In fact, the Sardi's maximum weight levels require a strong supply of cereals. In the Yagour of Ikis, the local elite's example was followed during the 1980s by a number of agro-shepherds, intending to feed their new and growing Sardi herds more nutritiously (Demay, 2004), and doubling the amount of cultivated soil in 20 years, a trend which is still growing today (Domínguez, 2010). Such agricultural expansion and shift in herding land use along with new globalizing influences such as emerging state structures and ideologies, mass media, new agro-zootechnical advances, migrations, market integration, tourism, NGOs and global Islamic movements, seem to be contributing to the demise of *agdal* governance systems and tradition as a whole. In fact, these systems generally remind non-indigenous actors and policy-makers of an inferior

tribal past which must be (for policy-makers and other external actors) entirely overcome, even if such criticism of traditional localism is a politically given value that has been repeatedly challenged, both from the natural and the social sciences.

Despite the increasing scientific recognition of local governance systems and at least two decades of increasing awareness by civil society and policy-makers, I observed in the High Atlas mountains that these systems were being rapidly eroded in the course of the progressive interconnection of people and ecosystems under the rules and forces of global markets (Domínguez, 2010) like elsewhere around the globe (Byrne and Glover, 2002; Jodha, 1985). On the basis of such failure it can be argued that there has been misunderstanding at the science-policy interface (Swyngedouw, 2010). Such a communicative failure implies that the facts established by the scientists in this arena, are not translated by the decision-makers, and do not incorporate the most pressing concerns and priorities pointed out by scientists.

In light of the present work, it seems more likely that the crisis of the communal management regime of the Ait Ikis *agdals* and its consequent environmental degradations have been brought about not just by locals' ignorance on the management of their own natural resources, but through external socio-economic stimuli poorly planned by the administrative and political persons in charge. One of the ways to achieve the mentioned necessary implications of decision-makers and politicians that affect the socio-ecological problems of the *agdals*, are through patrimonialization, which seeks to give a clear public recognition to the natural and cultural values of these socio-ecological systems of governance at a local, national and international level. As exposed in the introductory section, this concept of patrimony can be defined as the whole material and symbolic elements centred on a stakeholder (an individual or a community), that struggles to maintain and develop its identity and autonomy by socio-ecological adaptation through time and space in a dynamic universe (Ollagnon, 2000). In this sense, different figures exist that give a public recognition to this status and protect/reinforce the different ways in which these patrimonies exist. These figures have been established in cooperation with experts, administrations and local actors.

In the case of the *agdals*, given that they generally concern very specific local communities, somewhat isolated and with strong cultural particularities, the follow-up of such a patrimonialization procedure must be based on an especially participative approach. These approaches may combine cycles of reflection and action in a way that can merge the theoretical knowledge of the external actors and the practical wisdom of the local populations to achieve real solutions that answer to the pressing problems of the latter and the environment upon which they rely (Reason and Bradbury, 2008; Robinson, 2008). In this type of action-research patrimonializing approach, the scientists work closely with the local communities to produce the knowledge and follow the procedures that value a unique natural and cultural heritage. This way of working facilitates the possible governance transformations in agreement with the local populations, at the same time as they are tested and shared through international scientific

literature and respectful dialogue with the public administrations. By opposition to the dominant way of linking science, conservation and development, this approach is relatively new, and is a highly valued source of original research today and has a recognized future development ahead in terms of innovation and applied science (Ruiz-Mallen *et al.*, 2012). Contrary to the dominant way of scientific thought, this relatively new and innovative method does not consider itself free of values or being morally neutral. Nor is it part of a framework of undisputed or undisputable paradigms. On the opposite, it seeks to make local actors participate, thereby facilitating a degree of integration and in-depth learning about local and scientific knowledge, rarely attained by other methods which are more distant from or less sensitive to the local populations (Funtowicz and Ravetz, 1991; Ravetz and Funtowicz, 1999).

Thus, a training network of students and researchers composed partially by local community members together with scientists, local entrepreneurs, NGOs and state actors, inspired by an action-research approach and seeking to reinforce the values and local institutions that are gradually being replaced by public administrations, could be a potential channel to combat the communicative failure between local populations, scientists and policy-makers. In fact, combining ideas and proposals made in accordance with the local community can promote and reinforce these local modes of governance in the future. In the specific case of small communities such as the Ait Ikis or more generally those of Mount Mesioui, such an action-research training network should attract at the same time autochthonous and foreign development actors, capable of participating on a continuous and long-term basis in the creation of initiatives to support these *agdal* systems of governance that have a proven interest in conserving the environment and local equity. Of course, such a project would have to be designed for the long term (5–10 years), in several stages, and on a well-targeted site. For example, addressing the whole valley of the Zat where the Ait Ikis lies and the *agdals* of many other settlements too (Figure 7.4), composing a holistic coherent system of great interest to the knowledge transfer question exposed here. It seems to me that only on this space-temporal scale could we apply, in a more effective way than top-down approaches, the scientific knowledge obtained about of *agdal* governance. The main objectives of such a network should therefore be:

1 To train students and researchers, autochthonous and foreigners, in the patrimonialization action-reseach arena around *agdals*, concerning conservation and development, focusing on a small and well-targeted group and territory such as the Ait Ikis or Mount Mesioui, and bringing about real interaction that should last over time.
2 To create 'activist' synergies between the actors related to governance, both shepherds and breeders, as well as researchers, universities, public administrations and other development actors (international NGOs, companies, cooperatives, local associations, etc.).
3 To explore new ways of transmitting and sharing knowledge about governance between local populations and actors external to local communities.

Conclusion

By the data presented here, I can conclude that: first, the traditional *agdal* governance system assures continuous vegetal cover, and hence no soil erosion, thanks to its collectively agreed rotatory use of space; second, it also assures relatively equal access to local natural resources as all members of the community have the same rights to the common pool and decide on their rules and management processes together, according to the majority of the community's interests and local traditional ecological knowledge. Finally, it promotes the conservation of a certain pastoral biodiversity, particularly that which is of most interest to the local community. Nevertheless, a communicative failure in the science-policy interface is observed and the local *agdal* systems, like other traditional community-based governance systems around the globe, seems to be in a deep crisis. I consider that a participative patrimonializing action-research approach could be one of the means to better promote the *agdals* as a socio-culturally resilient, economically sustainable and ecologically enriching land use system, having been demonstrated by the local populations through the centuries to be a key element of resilient governance to promote local livelihoods and environmental conservation.

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Notes

1 These dates vary each year according to each year's negotiations at the village's assembly (*jmaa*).
2 As we saw in the section 'The governance of ait ikis agro-pastoral diversity', apart from the big Yagour *agdal*, the Ait Ikis base their agro-pastoral territorial governance on nearly ten other small *agdals* concerning different resources.