Resources and Appropriations: Back to the Jerid Oases (Tunisia) after the Revolution

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RESOURCES HAVE A HISTORY: it is "written" by social groups that define certain things as "resources."

In the small Jerid oasis region of southwestern Tunisia, whose desert environment is unfavorable to human settlement, the definition of these resources and their appropriations is at the heart of contemporary concerns. However, we will see that these appropriations vary according to type of resource, social group, and methods of appropriation.

To explore the forms appropriation takes, we will take the liberty of simplifying the social forces at play, reducing them here to their two principal actors, namely local society and the authorities, whether colonial or national.[1]

This paper highlights three natural resources that figure among the limiting and decisive factors of life in the oasis: water, land, and plant material.[2] As we will see, the assessment is mixed. Although the state's local annexation takes a largely classic form overall, especially in the context of a highly centralized and interventionist state, it is not imposed on all of the resources and not always in an exemplary manner, except perhaps for water, which was identified early on as the lever necessary for controlling these oasis spaces (Battesti 2012).

In expanding the term "resource" to include the notion of "socioecological resource," we deconstruct the meaning of "appropriation" somewhat, which is then no longer solely the work of dominant actors on the local scene.

After briefly introducing the notion of "socioecological resource" as well as the oases and palm groves of the Jerid, we focus specifically on water, land, and genes to illuminate different ways of "appropriating" resources.

Socioecological Resources

There is no such thing as a resource per se, since anything, whether material or immaterial, can become a resource when it is interpreted by a group as a means of action available to it. As a result, characterizing something as a resource is intrinsically linked to a social situation and social actors. Thus "resources" may be defined as:

> [Those] elements of the natural environment [that] gain significance only once they form an integral part of the cultural system. (Blanc-Pamard 1991, 478-80)

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1. Speaking of "local society" or the "state" is an artifact of language; only members or representatives of local society or the state actually think or act.

2. To be consistent with this issue, we leave aside the human resource, even though it is more crucial here than elsewhere in the maintenance of the agro-ecosystem.

What counts as a resource for some social groups or people does not necessarily count as such for others. Our relationships with the environment vary. In a sense, to appropriate a resource could be considered redundant. Clearly, to appropriate something for oneself is to make it one's property, but it is also to "appropriate" it, that is, to make appropriate to a particular purpose. Yet, a resource is already appropriated for a purpose. We will see later how to better break down this notion of appropriation and how theory can be modified on that basis.

Appealing to the notion of socioecological resources makes it possible to show that various practical and cognitive relationships with the environment are operating simultaneously (Battesti 2004, 2005). An actor uses not only various resources that are strictly physical and drawn from the environment, but also different social registers, both moral and pertaining to knowledge, that make this use possible and guide their practice (Battesti 2005). In effect, socioecological resources are the combination of these two types of resources, correlated with each other and deployed simultaneously.

In the field, the mere observation of natural resources is not enough to explain the evolution of environments. Rather, it is necessary to examine the registers of ideas and practices implemented by the actors in using (or not using) these resources. These registers of socioecological resources have their preferred spaces and times of expression, which allows them to coexist. All social actors mobilize these socioecological resources according to their competencies and the situations in which they find themselves. Clearly, while an actor may prefer to use one type of resource, he is able to use others (Battesti 2004, 2005).

The Oases of the Jerid

Oases are singular ecosystems, anthropic and artificial, situated in environments that are highly constraining for human groups. While the official area of the Jerid is 4,719 km^2, most of its inhabitable surface area is limited to 8,700 hectares of palm groves, half of which is made up of old palm groves (Degache, Tozeur, Nefta, and el-Hamma, with their foundations dating back to antiquity), while the other half consists of modern palm groves (the first of which were the work of French colonizers in the twentieth century).

This paper is based on fieldwork conducted in these oases during the summer of 2011, a return to the field we had previously studied in the mid-1990s (Battesti 2005). This updating proved useful because the situation had evolved over the intervening 15 years but also because revolutionary times are a privileged moment for the observation of structures since their resistance (or lack thereof) to the revolutionary shock is instructive.[3]

Oases are the combination of a village or larger urban center and irrigated and cultivated land (most often a palm grove) in an arid environment. The palm grove of an oasis is a puzzle of private, irrigated, and highly

3. This fieldwork was conducted six months after the Tunisian revolution of 2010-2011. Although the survey work with the public administration was easier than it had been before, the interviewees wished to remain anonymous.

Photo 1: Cultivars of dates, bananas, pomegranates, figs, citrus, apricots, and tossa jute (*Corchorus olitorius* L.) in the old palm grove of Tozeur

(Photo by V. Battesti, August 2011)

Photo 2: Satellite view of the modern palm grove of Ibn Chabbat and its Deglet Noor date palms
(Photo by CNES/Spot Image, 2012, edited by V. Battesti)

Photo 3: On a water path for tourism – Corbeille de Nefta
(Photo by V. Battesti, August 2011)

Photo 4: Grapes, figs, and early dates sold directly in the informal market in the evening upon return from the gardens

(Photo by V. Battesti, August 2011)

anthropized gardens that support intensive mixed farming. The oasis is as integrated into its desert environment (through association with the surrounding pastoral economies) as it is freed from it by a specific ecosystem. The agriculture practiced there superimposes three strata: the highest one consisting of date palms, an intermediary one composed of fruit trees (oranges, bananas, pomegranates, apricots, etc.), and in the shade, that of low-growing plants (vegetable farming, fodder, and grains). Another constant in the structure of the oasis is the farming beds, which are suitable for flood irrigation.

In the Jerid, a land of oasis, it is appropriate to think of water as the primary resource driving these agro-ecosystems since its technical and social control is essential. Elsewhere (Battesti 2012), we have shown the slow but persistent appropriation of this resource first by the colonial administration and later by the independent state at the expense of management at the local level. This appropriation partakes of the tight management of local agriculture by the public administrative services (today, the CRDA)[4] and the date industry (GIFruit),[5] both driven by technological voluntarism. In fact, control of the resource and its strategic distribution across sectors (tourism, for example) eluded local society. Today, the state is partially opting out of it.

Water: A Resource Confiscated, Displaced, and Returned to Local Society Once Neutralized

The history of the Jerid is that of a continuous struggle for control over water. However, the period of colonization brought unprecedented innovations and radically renewed the way the relationship with the environment was conceived. To summarize the state's appropriation of the water in the Jerid, we can say that before the French colonization of Tunisia, water was in a sense "free." At least, this is how local memory recalls it. Yet owners were required to pay the water administrators responsible for its distribution and to send their *khammes* (sharecroppers) to carry out maintenance. This collective work by local communities was essential to the survival of the oases: they cleared the springs and cleaned the water distribution networks to and from gardens.

In 1881, the new masters of the country, who consisted of colonial civil servants and colonists motivated by positivism and by the idea that the future lay in cash crops, introduced a rupture by eliminating the right to water as private property, and nationalized this resource with the decree of September 24, 1885, requiring a state takeover of water. However, this abrupt decision was tempered by the second article of the decree, which recognized and upheld "private rights to property, usufruct, or usage as they existed" prior to the decree.

However, the colonial state was to create a new resource, namely a modern source of

4. Regional Commission for Agricultural Development (*Commissariat régional au développement agricole*), in this case, for the Tozeur governorate (which corresponds to the Jerid region).

5. This consists of professional fruit growers' associations born of the recent merger of associations of growers of dates (GID), citrus and fruit (GIAF), and grapes (GIVI). GIFruit is a legal representative of public economic interest and a creation of the public administration aiming to regulate fruit production.

water, extracted using boreholes that were to dry up the springs, and with them the rights to these springs. The old palm groves increasingly needed to be watered using modern borehole extraction in order to make up for the shortfall created by this very form of extraction. Therefore, the "private" share of the total volume of water for irrigation steadily diminished until it finally dwindled to nothing, giving way to "state" water, which had to be paid for and which above all was no longer locally controlled.

The water property rights continued in the oases until 1975, when a new water code (law no. 75-16 of March 31, 1975) converted them into water usage rights, allocating a volume of water to a user proportional to the surface area of his/her land.

Why were these boreholes needed? The aim was to create new irrigated perimeters by "borrowing the water of the future" without being sure of being able to "repay" it. One reason was that the existing model of the palm grove did not match the new administrators' idea of productive agriculture (that of a modern cash monoculture) and suggested a form of stasis they intended to leave behind; another was that these oasis territories appeared to them to be inexorably rooted in local negotiations that completely eluded them. As Pierre Bardin, a civil controller of Gafsa, north of Jerid, declared,

> The oasis society is subjected to an inexorable law that requires it to review from generation to generation the enjoyment of wealth that cannot increase among groups whose essential needs continually vary. This law explains the complexity of land-related customs, the extreme entanglement of land and water rights, and the resulting constant conflicts. (1944, 14)

The colonial palm groves departed from the old ones, being developed aside and from scratch. In the process, an entirely new concept of oasis farming emerged in the Jerid, consisting of irrigated spaces solely dedicated to agricultural production, which put an end to local male sociability, inherited gardens charged with history, and real living spaces (Battesti 2005). Moreover, this consisted of agricultural land dedicated solely to one of the three strata of the palm grove (the dominating level of the date palm) and even more to just one (the Deglet Noor genotype) of the 260 cultivars collected in the old palm groves.

For these agricultural businesses, productivity was the measure of success, and the wage system the only form of social organization of labor. As for the origin of their water resources, it was in a sense an exception from local law, with the colonial authorities inventing "new" sources of water that unfortunately drew from the same reserves as the old ones:

> Every year, farming wins out over the desert thanks to this instrument of civilization *par excellence*, namely the artesian borehole. (Brunhes 1902, 268)

Following independence, the state continued with this approach and even amplified the trend when the extent of Saharan groundwater was discovered. Counting on the inexhaustible resources of the SASS aquifer,[6] it continued to create vast palm groves that consisted of modern plantations of the *Phoenix dactylifera*, Deglet Noor variety, and thus doubled the irrigated areas of the Jerid, especially in the last quarter of the twentieth century. During the

6. *Système aquifère du Sahara septentrional* (Northern Sahara aquifer system) (Mamou 2010).

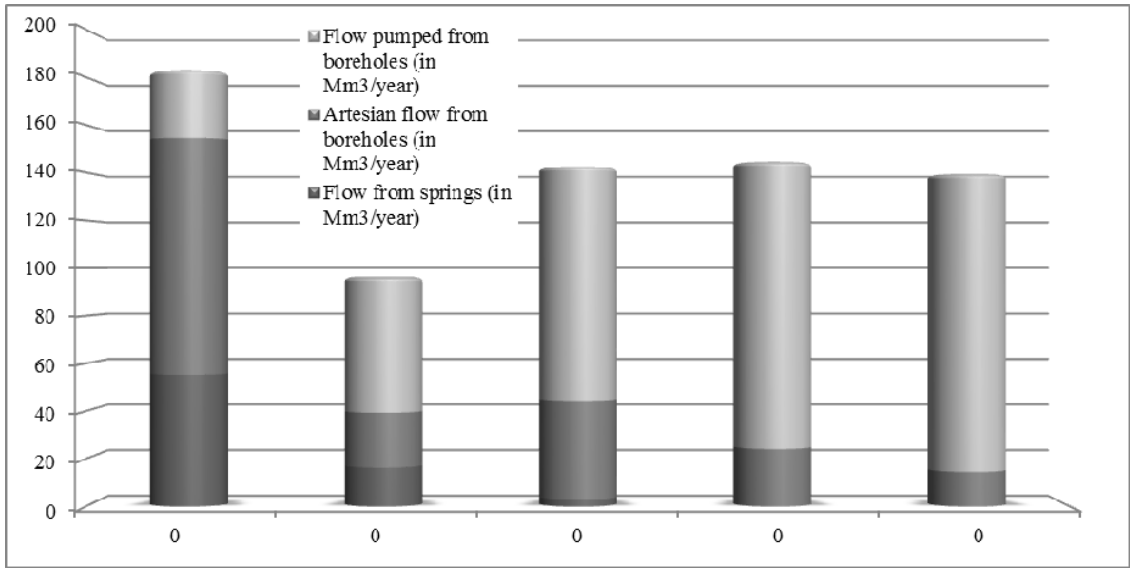
1980s, the new boreholes permanently dried up the artesian springs of the ancient palm groves. In fact, the survival of the old palm groves became dependent on the very same state boreholes that dried up their water sources.

By all appearances, the resource was merely the object of a costly process of displacement from locally managed springs to overexploited deep boreholes, the technical mastery of which depended on state engineers. The dispossession of local societies of their water resources was thus made complete. This verged on a sleight of hand. The water is now pumped from the boreholes, distributed and allocated by the state, and is no longer free. Moreover, it is now a dwindling resource (Figure 1). (Battesti 2012)

The resource was therefore confiscated, displaced, and ultimately returned in part to local society. The return was not welcome and some pressure was needed because this part was not the best part. Comforted by a solid positivism, the engineers reserved the management of the underground resource for themselves.

In fact, it was the issue of the cost of that resource that was put back into the hands of the local society. Just before Zine el-Abidine Ben Ali became president, the state, already in a privatizing mindset, created Community Associations (*Associations d'intérêt collectif* – AICs, law no. 87-35 of July 6, 1987), later converted into Community Interest Groups (*Groupements d'intérêt collectif* – GICs, law no. 99-44 of May 10, 1999), which were replaced in turn by Agricultural Development Groups (*Groupements de développement agricole* – GDAs, law no. 2004-24 of March 15, 2004). These are mandatory cooperatives

Figure 1: Evolution and origin of water flow in the Jerid



of irrigators (reports refer to a participatory approach[7] when this approach is in fact imposed on the local farmers), to whom the costs of the use of the water were gradually transferred. At each stage in their transformation, the only "gains" for these cooperatives were a greater share of the maintenance and labor costs of the boreholes.

Expressions of hostility during the 1990s against water that had to be paid for and had become insufficient (as in "water strikes," i.e., no longer paying one's bill to the Regional Commissions for Agricultural Development [*Commissariats régionaux de développement agricole* – CRDAs]) (Battesti 2005, 283) thus became ineffective. The resource is returned to local society, but is nothing more than a burden.

In his engineer's logic, one of our interviewees from the CRDA found this to be right since it amounts to allocating 15 percent of revenues from agriculture production for irrigation. However, the calculation is only valid for farms with high productivity. Yet, agricultural production destined for the market is only one of the aims of the gardens of the old palm groves.

There remains the condition of the water resource. It is clear that the use of the non-renewable groundwater of the *Continental Intercalaire* and the *Complexe Terminal* verges on mining. But what will become of the oasis region once the deep aquifers are depleted? Although numerous reports are available, the projections do not go beyond 2030 to 2040. As a manager at the Tozeur CRDA put it, "afterward, it is unclear." (July-August 2011) Or as Joëlle Brochier-Puig rightly comments,

> The state therefore has available to it scientific information connected with the long term as complex as the complexity of the aquifer system itself. The limits of the resource are only made more opaque and perceived as "adaptable" to economic and social demands. (2004, 309)

In other words, the more unclear it is, the more negotiable it is.

Until now, national tradition in Tunisia has hardly favored local democracy or any other form of citizens' participation in their future. It is not even clear that the revolution will change this state of affairs or that the fall of the dictatorship will bring with it the fall of the technocracy. With their power practically unshared, the engineers are reluctant to relinquish it to the farmers, even partially. They believe that those people "are not only ignorant but also bone idle. They do not want to work." (Engineers from the agricultural services, July-August 2011)

The worlds of engineers and farmers meet only rarely and increasingly infrequently since extension services were sacrificed on the altar of budget cuts (advocated by the IMF). However, the two parties share the same faith in the future, both believing that getting past the current crisis in water resources is only a matter of time, but for different reasons. This consensus rests on two misunderstandings: the state engineers misunderstand the local agronomic system and its rationale, and the farmers misunderstand the hydrological mechanisms, a subject in which care is taken not to instruct them.

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7. World Bank. 2009. "*République tunisienne: Réflexion stratégique sur l'eau potable et l'assainissement en Tunisie*." Report No. 44744-TN. Department of Sustainable Development, Middle East and North Africa Bureau. Washington, DC.

The overall decrease in the regional volume of water for irrigation is small but real. In addition, its utilization is becoming increasingly difficult. The farmers consider the volume of water for irrigation insufficient. While the agricultural administration recognizes this implicitly by seeking to reduce waste (by increasing the water tightness of the pipes and concreting), from the engineers' point of view, the water from the deep-water table (which lies hundreds of meters below ground) is under control as databases have been populated with scrupulous descriptions of its availability and utilization. The resource is there in Excel spreadsheets, as straight as a die, and ultimately fears are limited since progress and technical solutions (including desalinating seawater or bringing in rainwater from the north of the country) will arrive in time to compensate for the depletion of the groundwater. Although the engineers admit to having pushed the process to its limits, they argue that this is because the methods were still imperfect (for data processing and modeling). There remains considerable faith in technical tools. Science is the means to salvation: "we will get there!"

The technical discourses of the agronomists easily connect the local to the regional, and even the international, dimensions but without ever mentioning the destination of this irrigation water, namely the garden bed the farmer opens with a stroke of his hoe to flood his vegetables on his *nūba* day (water turn), standing barefoot in the flood.

The real preoccupation of the farmers is the water that can be drawn from the ground, not the resource or its sustainable management. The geography of the water is completely different from the geological maps. On the surface, it has long been a geography of a water course born of a complex local organization that Tozeur tradition traces back to Ibn Chabbat (a thirteenth-century man of letters and mathematician).

The water volume of the main *wadi* is subdivided into streams leading to different areas in the palm grove, then between the beneficiary plots during times of water turn-taking. The water passes from neighbor to neighbor without real negotiation, becoming even so the object of a transfer. In the old palm groves, most of the *seguia* (water distribution canals) have been buried over the last few years, as in modern palm groves. Although there are complaints that the water supply is insufficient, the water arrives anyway. As for the drying up of the springs of Tozeur, blame is not placed on the drop in the piezometer level caused by borehole extraction, but rather on a flood that took place in the 1980s (the rains are always negatively perceived in the oasis) that is said to have filled the springs with sand, making it impossible to start them up again even after cleaning them out.

What does the future hold? A sense of fatalism is in evidence: it is in the hands of God, a repairing God if He wants to be, who according to local tradition controls the level of the water table, as He controls the sea tides, and makes the underground water flow as rivers, from the west, like most saints[8] buried in the Jerid (from Seguia el-Hamra in the Western Sahara). In the neighboring region, a similar vision is shared:

8. The saints themselves are often conceived as the founders of the oases, having caused the springs to spout water.

> Dried-up springs do not worry the Nefzawi; rather, they reinforce the idea of cycles and therefore minimize the severity of the regional water situation in addition to the supernatural image of the resource they carry. (Brochier-Puig 2004, 312)

Beyond this moderate optimism, engineers and farmers hardly meet except in a recent agreement regarding shallow groundwater. The authorities have long balked at allowing the unplanned and illicit wells dug a few meters to a few dozen meters deep into an aquifer that is replenished through run-off and can be too saline for farming. These wells make it possible to compensate for the failures in the community network of the palm grove at the garden level (which are always dangerous in the hot season), and they allow for diversification strategies (such as vegetable farming). Today, given the insufficiency of extractable deep water, these private wells are even "encouraged" (i.e., subsidized) by the state via the agricultural services.

According to the Department of Water Resources, in August 2011, one-fifth of the irrigation flow was made possible by 2,000 wells situated at the level of the shallow groundwater table (32.6 Mm^3/year, while 143 Mm^3/year come from the 200 deep boreholes), when in 2007 it was still reported that the deep boreholes allowed for the irrigation of 95.8% of the irrigable land.[9] Today, the two cumulative sources of water ensure only a continuous fictitious flow of 5,569 liters/second (l/s), that is, considering the 8,700 irrigated hectares in the region, a continuous fictitious flow of 0.7 l/s/ha, the minimum that can be expected for a palm grove (1 l/s/ha is considered comfortable). Necessity knows no law.

In sum, the prime resource of the oasis region of the Jerid underwent state appropriation in the confiscation sense of the term by displacing its source (at a cost). Meanwhile, part of it is returned to local society, including its cost and daily management but not its control, which neutralizes its leverage with the public administration, begging the question: is water over which one has no control still a resource?

Land Ownership: An Invented, Multiplied Resource of Modified Value

As archetypes of artificial ecosystems, oases clearly owe their existence to the essential resource that is water, but also to human labor, its social organization, and to the knowledge and practices that created this fertile soil. The displacement of the water resource thanks to boreholes made it possible for the social groups with this power to invent nearly unlimited land resources.

Until the colonial period, the land issue consisted of managing a finite quantity of land, made up of a multitude of gardens laid out like the pieces of a puzzle. Outside of this oasis land, the collective lands of the Bedouin groups dominated in an entirely different agricultural, social, and political economy (Puig 2003). Within the palm grove, a minority comprised of affluent notables (the *šorfa*) shared a large part of the land. This

9. Republic of Tunisia. 2007. "*Enquête sur les structures des exploitations agricoles 2004-2005, Gouvernorat de Tozeur*," Ministry of Agriculture and Water Resources, Directorate General of Studies and Agricultural Development.

local power could not afford to enter into open conflict with the central authorities. Peace was essential to smooth business operations and to facilitate the sale of produce from the oasis to the outside.

The colonial authorities began by intervening in this land resource, using their discretionary power to dismantle local fortunes by confiscating and breaking up the best farms. A portion of these was then ceded to representatives of the Tijania brotherhood from Algeria (a French *département* at the time):

> In this atmosphere of insecurity, abuse, pillaging, and pauperization, only Algerians, who were under French protection and therefore shielded from Beylical confiscations, could buy palm groves safely. (Attia 1983, 368-9)

Thus, by imposing powerful foreign owners, both Algerian and French, the public administration wrecked the traditional management of the oasis. However, the social injustice in land distribution remained, and from the nineteenth to the twenty-first centuries, farmed land continued to be concentrated in the hands of a happy few.[10]

The real objective of the colonial administration was to invent irrigated lands from scratch toward cash crop farming by using the vivification tool *par excellence*, namely the borehole (which was artesian, at least at the beginning). This made it possible for the administration and settlers to avoid becoming embroiled in local conflicts linked to the old palm groves, since by drilling boreholes they could create their own palm plantations. In contrast to the general use prescribed by the decree of January 14, 1901, in the Jerid only the lands to be sown were considered "collective lands of tribes or fractions of tribes," to the exclusion of grazing lands. In fact, a section of these grazing lands was prepared for vivification, which led to protests by the Bedouin at the end of the 1990s (Puig 2003, 162-79).

During the decade 1924 to 1934, Martel, a colonist, protected by the public administration and still famous today, created the first large modern plantation (120 ha irrigated by spring catchment, then by the first borehole dug in the region), which he called "L'Oasis." Life seemed to smile on these modern farmers, as their yields per hectare seemed much higher (Sternberg-Sarel 1961, 133-4). Yet it is not self-evident that yield per hectare is a relevant term of comparison (Battesti 2005, 353) or that colonial policy had not devalued the produce grown in the old palm groves in favor of the Deglet Noor, a cultivar appreciated and commercialized on European markets by import-export companies based in Marseille (Attia 1983, 368).

Two types of land resources then developed side by side: the old palm groves and the new palm groves. The authorities tried to intervene in the structure of the former before abandoning them and focusing on the latter. As Sternberg-Sarel argued,

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10. In 2004 to 2005, the number of farms in the Jerid was estimated at 8,050 for a usable agricultural area of 8,323 hectares, versus 7,700 farms and 8,040 hectares, respectively, in 1994. Moreover, 56.8 percent of the farms had a surface area of less than 1 hectare and covered 20 percent of the agricultural surface area under cultivation, while the portion of farms of 5 or more hectares represented 1.5% of all farms and covered 17.1 percent of the total area. See Republic of Tunisia. "Enquête sur les structures des exploitations agricoles 2004-2005, Gouvernorat de Tozeur" (Tunis: Directorate General for Studies and Agricultural Development, 2007), 13.

> [The old palm grove] is too often poorly adapted to a modern and rational agriculture. (1961, 134)

This analysis is still shared by the agricultural administration. For the CRDA, the twin concepts of parceling out land and jointly owned property are their main concern. Parceling out land through inheritance makes areas available for production too cramped and investments impossible.[11] Jointly owned properties have their own set of problems as they often result in non-investment due to lack of agreement between inheritors and deadlocks over management.

Land consolidation projects (*Flurbereinigung*) were designed and then abandoned. The authorities tried to convince garden owners of the merits of reform, in both content and form. Bonuses for uprooting "common" palm trees (meaning any variety that is not the cultivar Deglet Noor) and incentives for reducing variety in the gardens had no tangible effect. As a result, the administration developed a strong sense that local communities are governed by a real resistance to progress, and local farmers, an impression of not being understood.

Clearly, the authorities have never really grasped the status of the gardens of the old palm groves. A garden is land that is inherited and judged on its production, which can even be quantified, but without reference to the notion of productivity, because part of its production – and not the lesser part at that – is social, making it a space for sociability and the expression of a kind of aesthetic (Battesti 2005).

Given this, the authorities successfully restricted the surface area of the old palm groves of the Jerid to ensure that no new plots would be added to the irrigated land, which would result in a higher number of beneficiaries to the water turns. The expanded surface area is estimated at 500 hectares. It is the result of private initiatives by people who were already land owners, or by *khammes* (sharecroppers) seeking to become land owners. This land reclamation on the fringe of the palm groves is perceived by the administration as anarchic. In one sense, this is the case because these creations are based on the idea – erroneous from a strictly legal standpoint – that the desert belongs to those who "vivify" it. In the 1990s and 2000s, it was even necessary to have the police uproot the date palms.

The state controls the quantity of this land resource. The few illegal plots created during the revolutionary troubles of 2011, even those perpetuated with *tabiyya* (fences made of palm leaves), will be bulldozed, and the problem will be fixed "after the election" (to the Constituent Assembly of October 23, 2011), when the authorities will regain full power of command (GIFruit manager, August 2011).

In the neighboring "young" date palm cultivation region, the Nefzawa (Kebili governorate), "that's another matter entirely" (CRDA engineer, August 2011), with illicit new plots made much more easily since land is held collectively and does not belong to the state, and the groundwater of the Complexe Terminal is closer to the surface. As a result, more than 1,500 hectares have come to be cultivated since the revolution.

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11. This parceling out of the land can also be "a form of attachment that farmers have for their farms," as suggested by Boualem Bouammar and Mohamed Azzedine Idder (2006, 22) in the context of Ouargla. Put another way, it constitutes the evidence of a value given to the land resource, which is not measured solely with regard to economic factors.

Meanwhile, in the Jerid, land resources are statistically monitored. The agricultural services have lost hope in old palm groves, but at least the charts in their annual reports display this monitoring of local land resources.

In addition, the state multiplied the irrigated surface areas thanks to its own palm groves that meet norms of effectiveness decreed by the engineers. In the last quarter of the twentieth century, the total surface area of cultivated land doubled, increasing from 4,000 to 8,700 hectares. Yet here, too, a degree of moderation took place since during the last decade, the appetite of the CRDA was limited to 500 additional hectares, since water resources are now an immediate limiting factor.

So, new perimeters have been created from scratch, distributed in plots of 1 or 2 hectares to poor farmers, government backers, and newly sedentary Bedouins, all of whom are supervised by engineers in the management of their agricultural endeavors. Another portion of these new irrigated perimeters, nearly 650 hectares farmed by SODAD,[12] was privatized in the 2000s, once its profitability was assured, in the form of plots intended for technicians and young farmers (250 ha) or granted to agricultural development companies (400 ha in Sdeda, el-Hamma, Mrah Lahouar, and Nefta).

With the revolution, the discontent was focused on this last category of modern palm groves, which were said to have been given to rich families close to the authorities (in fact, they were leased for 15 years). They were immediately the subject of popular reappropriations. In July 2012, these four large irrigated perimeters in the region remained occupied.

The overall surface, in hectares, of this land resource is one thing, but its land-use is another. Apparently, the goal is clear: whether the palm grove is old or modern, agriculture prevails. However, some public and private initiatives participated in a sort of renewed enchantment of the old palm groves geared towards tourism, as in the creation of boreholes for the "Corbeille" of Nefta (Photo 3) promoted by the Ministry of Tourism (Battesti 2009, 2012).

In theory, changing the land use is a right reserved for the state. In the final years of Ben Ali's rule, tourism projects of great scope were granted exemptions even within the palm groves. This was especially the case in Tozeur, a real tourism capital, with its Chak-Wak amusement park (displaying dinosaurs made of resin), Planet Oasis (a seven-hectare site with plans for parabolic flights in an Airbus, even suborbital flights with the European Space Agency and the EADS Airbus group), and Eden Palm (a conservation garden and exhibition space).

These exemptions were granted for two reasons. The first was a promise to develop Saharan tourism, which was a national priority given the saturated market in coastal locales. The second was the fact that the mayor of Tozeur, himself a prominent entrepreneur in the oasis since 1990, promoted these developments.

A first wave (lasting from 1995 to 2005) of "*camping*" (open-air cafés under the palm trees) was created on the initiative (however unofficial) of garden owners. Most of the productive capacity of the gardens was preserved, especially as regards date palms. These adjustments to the ideal oasis garden nevertheless inspired

12. An agricultural development and date production company (Société de développement agricole et de dattes) and a subsidiary of STIL (a public agro-industrial conglomerate).

more enthusiasm in these small entrepreneurs than in the tourists. A more professional wave (beginning in 2005), backed by larger investments but still implemented in the context of the preexisting gardens, met with greater success among the local population, including, for example, the Berka and Nifer café/*camping* in Tozeur. The population was becoming urban, and its cultural mores were changing.

The Jerid is a conservative region where women have typically been confined to the domestic sphere. However, in recent years, they have claimed public space and a right to visibility. They now go out at night to the *camping* in Tozeur (especially during Ramadan), among themselves and bareheaded, something that was utterly unthinkable until recently.

The palm grove is a land resource where new spaces have been invented along with new practices, including going to a café with family or female friends at night, in the midst of well-lit luxurious vegetation, enlivened by musical entertainment. However, the gardens retain productive functions with palm trees, fig trees, banana trees, and grapevines climbing up date palm stipes. In the agricultural spaces of the old palm groves, the "Arab garden" is being reinterpreted. These changes are individual owners' initiatives, not community projects. They mobilize old land resources and add a tourism-related function or a recreational function that was previously reserved for the farm workers of the palm groves.

In the Jerid, land is a resource that has long been constrained in size as well as in its intended productive and social purposes. In appropriating the water resource, the technocratic state succeeded in increasing the land resource and changing its value by reducing its function to agricultural production alone. In fact, the modern palm groves have been the spaces needed by this unequivocal reinvention of the resource. Despite the limited availability of the land resource in the old palm groves, local society succeeded in developing the use of that resource for purposes, which have always been multiple. Therefore, these changes (land reclamation, diversification, welcoming of new social groups) should be interpreted as phenomena of appropriation, but this time in the adjectival meaning of "appropriate," as in "to make appropriate to a particular purpose."

Genes: An Abundant and Undervalued Resource

The living resource is the third basic component of the oasis, complementing the water and land resources. The irrigated land is serving first and foremost to welcome the plant material. Although it is the most promising resource, it is also the most widely ignored by the new masters (since the colonization) in the region. If we had to summarize the recent developments surrounding this resource in two words, we would say that agro-biodiversity is finally "almost valorized."

The first species to come to mind in this connection is the date palm (*Phoenix dactylifera* L.). More recently, other species grown there have attracted the attention of researchers, however, although this agro-diversity does not yet figure among the priorities of the agricultural administration or the engineers. At the Regional Center for Research on Oasis Agriculture (*Centre régional de recherche en agriculture oasienne* – CRRAO) in Degache, biologist Sihem Ben Maachia established the agro-biodiversity of

the olive tree found in the oasis gardens of the Jerid. Beyond the four locally distinguished categories (*'arbī, gāsī, nēb el-jmal*, and *zarrazī*), she noted 53 genotypes that were being preserved in the gardens.[13] Her work also includes local varieties of pomegranate and fig trees. Additionally, she envisions the creation of a gene bank for fruit trees (grapevines, olives, apricots, pears, peaches, and citrus) in order, at the very least, to preserve this local heritage for its adaptive value.

In the eyes of the political and engineering authorities, this research is nothing more than a scientific fad. For decades, the agricultural administration's ambition was to make all the palm groves conform to the colonial and/or modern model, amounting to a form of date palm cultivation reduced to a grid of one palm tree every 8 to 10 meters, the strict architecture of a monoculture, even of a monogenotypic (Deglet Noor) field. Yet the time has not yet come to question this direction. For the agronomists of the CRDA, the modern palm grove clearly remains the reasonable option. But why ignore the genetic resource of the local agro-biodiversity (with dozens of species of fruit trees or even of vegetables, grain, and fodder, and dozens of date palm cultivars collected by the local farmers in the old palm groves)? Why would this change, after all?

In many ways, this situation is an illustration of the point made by James C. Scott (1998) in *Seeing like a State*:

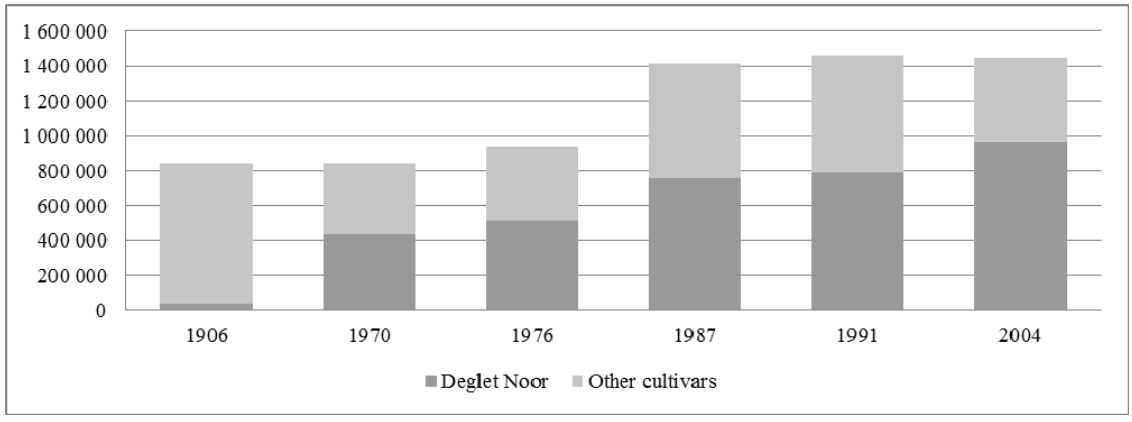
> Unable to effectively represent the profusion and complexity of real farms and real fields, high-modernist agriculture has often succeeded in radically simplifying those farms and fields so they can be more directly apprehended, controlled, and managed. (1998, 262)

This "high-modernist agriculture" born of a science that reduces "nature" to "natural resources" has undeniable merits if we pursue scientific management as an end in itself. In fact, this is at the origin of the choices made by the colonial authorities in favor of a form of simplified cash cropping for the Global South. This form of date palm cultivation, which achieved the most complete purification of oasis agriculture (distilled to a single stratum and genotype from a model of intensive polyculture in multiple strata and collections of palm cultivars), had already been tested in Algeria starting in the 1880s (Perennes 1979). It was also the choice of the import-export companies from Marseille that exercised their monopoly through a standardized product and crop. The amount of the genotype Deglet Noor that was planted expanded considerably, at the time of the Water Master Plan in South Tunisia (Plan directeur des eaux du Sud, PDES) in the 1980s, with 4,000 hectares of palm groves created, doubling the surface area of irrigated land of the region, all planted using the same genotype. Even with constantly increasing production (Figure 2), with 67% of the date palms of the Jerid consisting of Deglet Noor (Rhouma 2005, xi), the value of this date palm remained higher during the harvest season than that of the other cultivars.[14]

13. Personal communication.

14. According to data from GIFruit, in 2011 the Deglet Noor was valued at 1.2 to 1.4 dinar/kg. However, its remarkable price stability for the last 15 or so years is not a good sign since "all prices have been multiplied by 10, except for dates. The inputs have increased, but not for a kilo of Deglet Noor." (Industry analyst, summer 2011)

Figure 2: The rise of the Deglet Noor in relation to other cultivars (data: Rhouma 1996, 2005)



In the Jerid, these other cultivars are numerous, with over 260 documented (Rhouma 1994, 2005), collected for their organoleptic or cultural properties, named, and vegetatively propagated. While Rhouma[15] organized the first *in vivo* scientific collection of this agro-biodiversity, the agricultural administration was still pursuing a policy of uprooting these "common varieties." Yet the term "common variety" was first coined by the colonial powers and designates everything that is not the elite cultivar (Deglet Noor).

For their part, the farmers of the old palm groves have a specific name for each variety: *kenta, kentišī, bū faggūs, alīg, khwat 'alīg, 'ammarī biṣr ḥalū, gaṣbī, ghars ma'tīg, gūndī, ftimī, legū, khalt šetwī,* etc. Although their distribution channels are in part family based, the process is above all local or regional. In contrast, for the public administrations, which are encouraged to seek foreign currency, international outlets that go via large packagers and exporters take precedence.

Prior to colonial agriculture, the Deglet Noor represented only 4% of the date palms. Today, it grows everywhere, including in the old palm groves, especially in the illegal plots by farmers who, alongside their *ghāba* (classic gardens), wish to have a *sānya*, an annual income-generating project replicating modern organization methods and based on the Deglet Noor.

At the regional level, this genotype is even more predominant in Nefzawa, where the oasis tradition is less anchored and income-generating entrepreneurship is more prevalent. In this region, the land-related frenzy of the first eight

15. At the time, Rhouma was director of the Center for Research on Date Palm Growing (*Centre de recherches phœnicicoles* – CRPh) in Degache (which later became CRRAO, with a minor change in status).

months of 2011 (with over 1,500 ha of Deglet Noor planted) led to a shortage of shoots of this type of date palm in the south of the country, creating strong demand from Algeria (through smuggling, as phytosanitary laws ban all imports in order to guard against the Bayoud fungal disease), but also from the Jerid, where a series of thefts of shoots from the gardens (at 30 dinars per plant) contributed to a sense of post-revolutionary *fawda* (anarchy).

During the last few years, a new discourse has been emerging within the agricultural administration, incorporating key words from the "toolboxes" of international authorities, such as "resilience" and "biodiversity." This is likely also under the influence of the discreet lobbying of NGO networks. Thus the agricultural actors are trying their hand at promoting biodiversity. One CRDA manager stated,

> Foreign currency through the export of the Deglet Noor was being sought. Therefore, people planted only this variety. Today, we require at least 20% of common varieties [in each plot] in order to preserve the national genetic heritage. People are now convinced about [the value of] such diversity. The market is what pushed people toward monoculture. (July-August 2011)

Today, these actors wish to be the originators of this new watchword, to the point of denying the local producers their essential role in the maintenance of the cultivars (of date palms but also of secondary crops). This would fall within their mission of instructing the farmers in the twofold benefits of biodiversity: first, the introduction through *in vitro* cultivation of new cultivars with high market value close to that of the Deglet Noor would make it possible to supply niche markets and to compete on foreign markets against dates of even higher value, and second, genetic diversity would protect the oases if the Bayoud fungus were to cross the border.

This promotion of agro-biodiversity looks down on valorization of the cultivars selected by local farmers, which are the products of (at least) a thousand-year-old passion for collection. Rather, new cultivars will be imported *in vitro*, unencumbered by any social and ecological history. However, there is interest in one local cultivar, the *menakher*, which was made famous more than a century ago by American importers of date palms (Kearney 1906, 57-8). This interest arose due to the inability to correctly reproduce the Medjool,[16] a star Moroccan cultivar. The *menakher* would be sold for up to ten times the price of the Deglet Noor (Tunisian biologist, August 2011).

Locally, research circles have been the pioneers in the promotion of this resource,[17] and the urgency created by the degradation of environmental conditions (through the depletion of water resources) is undoubtedly the cause of the shift in the way in which these neglected genetic resources are valued. Who would have thought that the public administration would one day promote the cultivars of the *biṣer*

16. The *majhūl* sometimes spelled "Mejhool."

17. The project supported by the Global Environment Fund and UNDP and led by the UNESCO Club of Tozeur and directed by Ali Zouba (of CRRAO) is exemplary in this respect. Its objective of preserving the biodiversity of the palm groves and the expansion of the date palm and arboricultural heritage of the old palm groves toward the new seems to have been achieved in the pilot project of the modern palm grove of Mrah Lahouar (*Bulletin du RADDO* no. 2, July 2011).

and *kentišī* date palms because they are more resistant to briny water than the Deglet Noor in the light of plans to reuse drainage water for irrigation?

What strikes us as most ironic is that the agronomist engineers attempted to convert the local gardeners to agro-biodiversity when the farmers had in fact resisted decades of injunctions to practice monoculture. This resistance continued precisely because the farmers' fervent attachment to agrobiodiversity responds to an entirely different concept of agriculture, which continues to make sense alongside modern agriculture.

Conclusion

Our examination of the three resources essential for the functioning of the Jerid oases reveals three diverging fates.

Water resources were largely appropriated by the colonial state, then by the independent state. They were confiscated, displaced, and finally returned to local society, but in such a partial manner that the leverage of these resources was neutralized. Land resources were associated with water resources because in this region, only irrigated land has value. Thanks to new technical tools (especially boreholes), the state identified and expanded new land resources and to this day maintains strict control over their quantity and use. However, its value has been changed, especially by local society. Finally, the genetic resources are the very example of a willful omission by the state, even though it is otherwise quick to exert control. Only local society has continued to believe in the value of this resource, even if its value cannot be readily quantified in the current market.

The modern history of these resources began with colonization and a certain view of human beings' relationship to the environment. These colonial changes, which were perpetuated and amplified by the Tunisian state, upset local agreements concerning the use of resources. Moreover, the use of new resources was accompanied by new ways of establishing a relationship to the environment.

Our objective here was not to carry out an exhaustive inventory of the resources of the Jerid, but rather to take an interest in recent developments related to some of these (including water, land, and genes)[18] and to understand their modes of appropriation. Appealing to the notion of "socioecological resource" makes it possible to understand the differentiated uses of natural resources alongside those of mobilized notional resources, since a given relationship with the environment offers some opportunities and discards others, and in fact forms a resource all by itself. The state engineers, who operate on the scale of regional or national planning, and the local farmers, who operate on the scale of the garden and the day-to-day, act and think on spatial and temporal scales that are both effective with regard to their relationship with the environment.

However, there are competencies that hybridize or use several of these socioecological resources (Battesti 2004). This notion is useful from two perspectives. First, it shows that there can be appropriation without conflict, with a serene coexistence possible because the

18. Related to cultural resources, we could mention the architectural heritage (Battesti 2009) as well as the issue of local identities (Battesti 2005, 2009).

social groups use different resources on different spatial and temporal scales. Of course, these are the same water reserves that are going to be depleted, and ultimately this will have an impact on all these social groups. Yet today, even on the eve of a predicted catastrophe, there is still no open conflict. Second, this notion demonstrates that a single actor can appropriate and use several of these resources, provided that a competency that is not universally shared is acquired.

We feel strongly about the need to distinguish between numerous forms of appropriation. There is appropriation in the first sense of the term (in keeping with Roman law), which is to make something one's property. This is the most violent form of appropriation, the only one, in fact, to be deployed in modern farming, even if property is well anchored in the old palm groves. However, there is a second meaning, namely the act of making something appropriate to a particular purpose. In the traditional sub-Saharan context, others speak of "allocation to a use" (Le Roy 1991, 31). This is a more subtle form of appropriation in which different spaces are assigned specific qualities. Local farmers use their competencies to exploit these spaces and qualities accordingly depending, for example, on whether they are in a classical model garden (that of the old palm grove) or in a modern model garden (the new plot on the fringe of the old palm grove or the modern palm grove plot).

Lastly, we can suggest a third meaning by drawing from the field of contemporary art,[19] or the conscious copying of social actors associated with strategic reflection. This is an appropriation by reuse made possible precisely by what we call the competency to use varied socioecological resources. This makes it possible to use several spaces with different qualities requiring different models or relationships to the environment. In the context of the Jerid, this seems to be the symbolically dominated, that is, the representatives of local farming, who strategically copy the dominant custodians of agronomic knowledge and legitimate power without nonetheless detaching themselves from their own resources.

Three registers that coexist within the relationship to the oasis environment of the Jerid have been identified in earlier works: "classical", "instrumental," and "relativist" (see Battesti 2005). Although all actors position themselves in one or the other of these registers, they also borrow on a daily basis from the other available registers. That is, when a *khammes* goes from his garden in the old palm grove (the classical register) to his new plot, illegal but responsive to the models of modern farming, that *khammes* borrows then from the instrumental register.

Although the state appropriated some regional natural resources, gardeners appropriate the various spaces to particular uses, and in a single day, appropriate various socioecological resources too.

19. See the articles on "Appropriation (art)" in German and French versions available at: http://de.wikipedia.org/wiki/Appropriation_Art and http://fr.wikipedia.org/wiki/Appropriation_(art)

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Abstract

Vincent Battesti, *Appropriation and resources. A study the return to the Jerid oases (Tunisia) after the (Tunisie) revolution*

In the Jerid region of southwestern Tunisia, the dynamics governing the appropriation of resources vary depending on the type of resource. While it has yet to gain control of genes, the state has appropriated and secured control of key natural resources such as water and land. In the Jerid region, agriculture is concentrated in oasis areas (palm groves) forming unique ecosystems. Based on a field study conducted since the 2011 revolution in an area already examined prior to the revolution, this paper highlights the current dynamics at work in the region and provides a basis for rethinking the concept of "appropriation." It is important to emphasize that appropriation is not simply a matter of appropriating material resources but that it also concerns the appropriation of uses, practices, and ways of relating to the world. This paper suggests that competencies such as these are more likely to be found among local farmers than among agricultural policy makers and bureaucrats, i.e., the official bearers of agronomic knowledge, power, and legitimacy.

Keywords

Jerid (Tunisia), oasis, palm grove, garden, appropriation, resource (water, land, genes)

Résumé

Vincent Battesti, *Des ressources et des appropriations. Retour, apres la revolution, dans les oasis du Jerid (Tunisie)*

Au Jérid (région d'oasis du Sud-Ouest tunisien), les dynamiques d'appropriation des ressources varient selon les ressources considérées : si les gènes échappent quelque peu à l'État technocratique, il n'en va pas de même des ressources naturelles comme l'eau et la terre. L'agriculture de la région est entièrement contenue dans les palmeraies d'oasis, écosystèmes singuliers. Un retour sur le terrain après la révolution de 2011 a permis de souligner les dynamiques les plus récentes mais aussi de repenser la notion d'« appropriation ». Il ne s'agit pas seulement de s'approprier des choses matérielles mais également d'approprier à un usage, de s'approprier des usages et des modes de relation au monde. Cette compétence est peut-être mieux distribuée parmi les agriculteurs locaux que parmi les administrateurs de l'agriculture, détenteurs officiels du savoir agronomique et de la légitimité.

Mots clés

Jérid (Tunisie), oasis, palmeraie, jardin, appropriation, ressources (eau, terre, gènes)