

RESEARCH ARTICLE

Dynamics of Access to Pastoral Resources in a Farming Area (Western Burkina Faso): Unveiling Rights in Open Access Regimes

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Several misunderstandings obscure the understanding of access to pastoral resources in farming areas of West Africa. Firstly, pastoral resources are often considered as commons, whereas they are mostly based on open access. Secondly, these open access regimes are understudied and suffer from a poor understanding of what is a “right” in such regimes. This is an important issue, because grazing resources are disappearing in farming regions while fields for crops are extending, and because herders’ rights do not protect them from this adverse change in land use. Grounded on field work in western Burkina Faso, this article specifies herders’ rights of access in the area by drawing upon the concepts forged by Wesley Newcomb Hohfeld (1913). This American legal scholar sees rights as a relational issue, not as individual or collective entitlements. His analytical framework has been influential since the beginning of the 20th century and proves to be relevant to highlight farmers-herders relations. The article demonstrates that herders benefit from liberty of access rather than rights in the strictest sense of the word. Access to pastoral resources is weak because herders are subject to farmers’ power to change their land use from pastoral to agricultural.

Keywords: Land rights; Open access; Pastoralism; West Africa; herders/farmers relations; Hohfeld

1. Introduction

In Sudanian and Guinean West African savannas, which are dominated by farming, access to pastoral resources is being weakened by the extension of fields for crops. Increasing competition over resources jeopardizes pastoral mobility and leads to conflicts between herders and farmers. Herders seem to have no other option than moving away. Such a situation is generally interpreted in terms of unequal power relations between farmers and herders (Gonin et Gautier 2015). Our thesis is somewhat different: there is a difference in the very nature and scope of farmers’ and herders’ rights, a difference that explains part of this power imbalance. But in these contexts, the analysis of *rights* is a tricky issue. Following a legal anthropology approach, our understanding of legal relations is broad. Legal relations encompass all interactions between members of a group that are regulated by law, the latter being defined as standards with which everyone is expected to comply, whatever the form assumed by these standards in a given context (state law, unwritten customs, local practices, etc.) (Donovan 2008). While the customary prerogatives of farmers (what they are allowed or forbidden to do) have been largely studied, scholars have mainly focused on herders’ access to grazing resources and governance of rangelands in arid and semi-arid land (Thébaud 2002; Hochet 2003; Bassett 2009), maybe because Sudanian and Guinean West African savannas are still regarded as farming areas (Gonin 2014, 16). What are the legal prerogatives of herders in such open property regimes? How do these prerogatives evolve when confronted to the expansion of farming activities?

Drawing on a case study in western Burkina Faso, this article presents a new conceptual tool to describe herders' access to pastoral resources in landscapes dominated by farmers. We first show how herders' access to grazing resources relies on open property. Second, we provide a detailed account of the nature and scope of herders' prerogatives in such situations. Finally, we explain why such herders' prerogatives do not entitle them to protect grazing resources from new clearing and why their only option is to move away. To reach the last two goals, we use the analytical framework established by legal scholar W. N. Hohfeld (1913). While most economists define rights as "socially authorized actions" (Alchian et Demsetz 1973) an individual or a group is entitled to perform, Hohfeld sees them as a relational issue. Such a perspective echoes the anthropological definition of rights as social relations, but Hohfeld allows going further in analyzing precisely what can or cannot be done by an individual depending on others' rights.

2. Open Property of Pastoral Resources Under Farming Pressure

2.1. Methodology

Our analysis is part of a broader work on access to pastoral resources in West African rural areas dominated by farming, particularly western Burkina Faso (Gonin 2014). In January and May 2017, further fieldwork was conducted in Poykoro (**Table 1**), a village located in the Sudano-Guinean zone (annual rainfall: 1 200 mm) in south-western Burkina Faso. Poykoro was chosen as representative of the dynamics of access to pastoral resources under farming pressure.

We met with 21 out of the 23 farmer-herders in Poykoro who own more than 50 heads of cattle, and all the transhumant herders who came to Poykoro in 2017. Five participatory mapping sessions were organized through focus groups to collect information on herd mobility and on the spatial organization of the village's rangelands. They fueled discussions on herding constraints and property rules and practices.

2.2. From farming to agropastoralism: growing competition over resources

Historically, most parts of Sudanian and Guinean savannas in West Africa were devoted to agriculture. However herding has become increasingly important for the last 40 years (husbandry stands for instance for 22% of agricultural gross production in Burkina Faso in 2016¹), as a result of two major changes. First, local producers of cash crops (cotton and cashew nuts) began raising livestock. Many of them became farmer-herders, even if their livelihoods are still primarily based on farming. Second, a pastoral migratory drift from the Sahel to Sudanian and Guinean savannas begun in the 1960s and accelerated in the 1970s and 1980s (Bassett et Turner 2007). Sahelian Fulbe herders moved southward encouraged by a complex set of factors including the Sahelian droughts of 1974, 1984 and 2005, commercial opportunities, and the eradication of trypanosomiasis in the South. These savannas received more heavy and regular rainfall (between 600 and 1 400 mm a year), and offered extensive and abundant rangelands due to low population densities. Herders were usually welcomed by local farmers with whom they exchanged manure and milk for cereals. Herders also began to cultivate but their livelihoods still primarily relied on herding, in contrast to local farmers who invested in herding. All in all, an estimated 80%² of the population relies on livestock husbandry: access to pastoral resources is then crucial to maintain livelihoods of rural populations.

Table 1: Interviews.

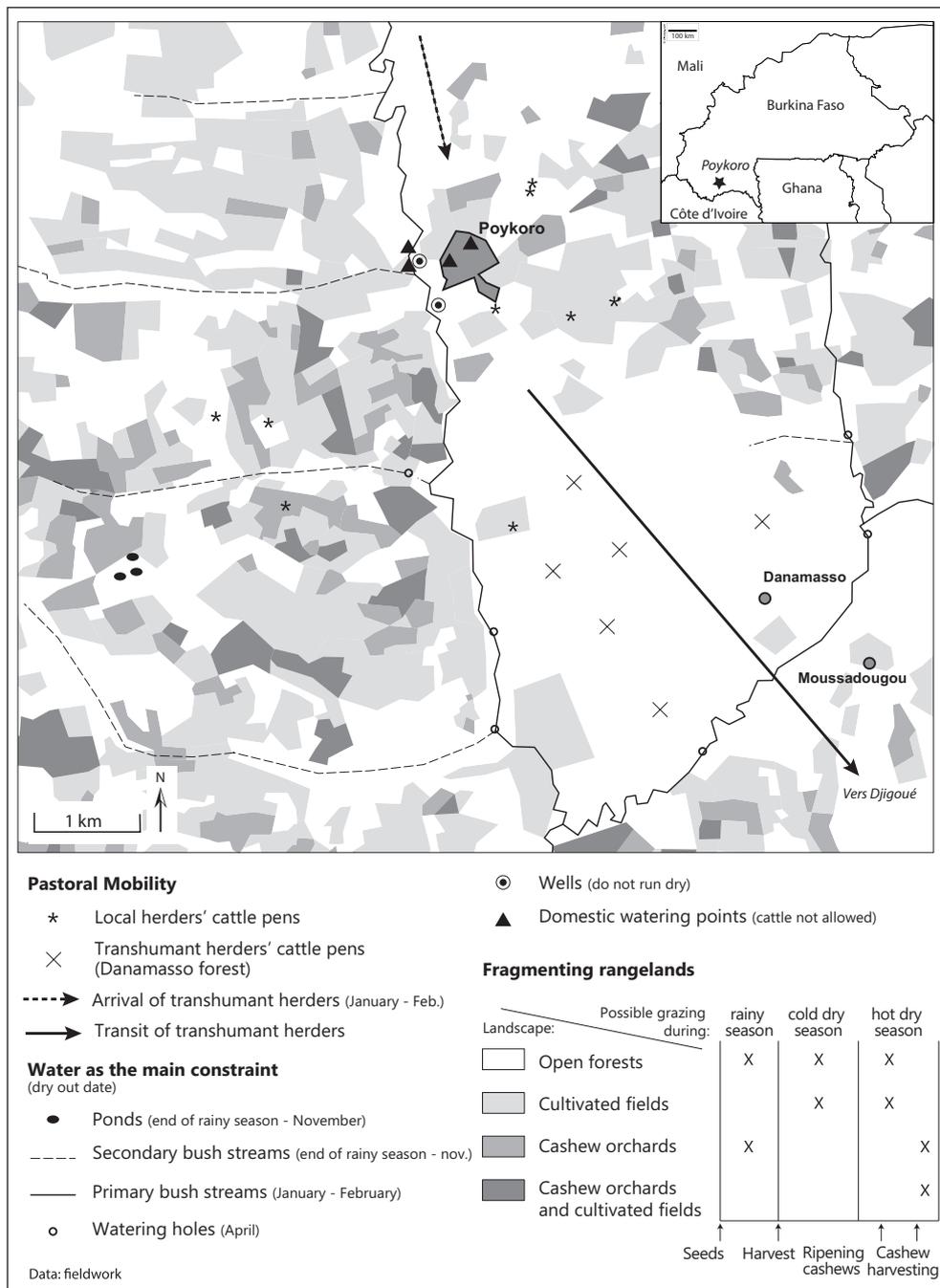
Actors	N° of interviews	Type of information collected
Village authorities	4	Village history (migrations), rules of access to resources
Local farmer-herders	31	
Whose livelihoods depend primarily on herding (Fulbe)	14	Rules of access to resources, personal access to pastoral resources, herd mobility, relations with other resource users
Whose livelihoods depend primarily on farming	17	
Transhumant herders	6	
Cashew producers	12	Rules of access to resources (crop residues, cashew orchards etc.), relations with herders (damage to crops, etc.)

¹ Data from FAO.

² Ministry of Livestock, Burkina Faso, 2011, *Contribution de l'élevage à l'économie et à la lutte contre la pauvreté, les déterminants de son développement*.

Poykoro, our field study, illustrates these dynamics. For a long time, Poykoro was a tiny village of farmers. At the beginning of the 1990s, transhumant herders, mainly Fulbe from northern regions of western Burkina Faso, came to Poykoro in the dry season (from January to May) to graze in the vast forests that cover the village territory. The first rains may fall in March in Poykoro and enable the growth of forage. When the farming season starts in June, transhumant herders head back to their northern home villages. At the very beginning of the 2000s, a dozen Fulbe transhumant families settled in the village all year round. On the other side, another dozen cashew producers in Poykoro invested in husbandry and own increasingly large herds, often cared for by Fulbe (**Map 1**).

Since 2000, Poykoro has experienced the dramatic spatial changes that other villages of Sudanian and Guinean savannas experienced as early as the 1970s. The increase in the number of cattle in the village has been accompanied by a reduction of rangelands. Croplands have spread thanks to increasing manpower (due to farmers' migration and natural population growth), expansion of cultivation thanks to the use of draft animals, and the spread of cash crops. In Poykoro for instance, the population increased from



Map 1: Poykoro: pastoral livelihoods under farming pressure (2017).

1 000 inhabitants in 2006³ to approximately 2 000 inhabitants⁴ in 2017. In a territory covering 60 square kilometers, population density has reached 35 or so inhabitants per square kilometer, versus fewer than 5 inhabitants per square kilometer in the 1960s (Savonnet 1968). The migrants from the central and western parts of Burkina Faso came in Poykoro to plant cashew trees, eager to benefit from the cashew boom that was happening in southern Burkina. Croplands have spread, impeding rainy season grazing, along with cashew orchards, impeding dry season grazing. The reduction of bush and the increase in the number of cattle has resulted in a more intense competition for natural resources between producers. Damage to crops caused by the cattle is pervasive, and conflicts between herders and farmers are multiplying.

The growing competition over resources has caused transhumant and local herders to move away from Poykoro territory, either toward neighboring villages or toward Côte d'Ivoire. Twenty transhumant herders came to Poykoro in the dry season in 2010, only six in 2017. The move may be seasonal (transhumance outside Poykoro territory during the hot dry season, from January to April, although local herders used to stay in the village all year round in the 2000s) or definitive (with migration toward Côte d'Ivoire). The hot dry season (from February to April) is the most difficult for herders. Before the first rains begin, streams, ponds, and watering holes dry up; pressure on the only remaining water point (a well) has increased dramatically in the last few years. Until 2010, all the village's cattle could water in the village all year round, even during hot dry season. With the increase in the number of cattle, this has become very difficult for the biggest herds. This is the first reason why fewer and fewer transhumant herders come to Poykoro and why more and more local herders leave the village for transhumance in southern areas. The second reason given by herders for avoiding the village during hot dry season is the risk of damaging the cashew orchards, whose maximum growth corresponds with this period. Finally, in a decade (2000–2010), spatial cohabitation between pastoralism and farming has become problematic in Poykoro. This state of affairs reflects the trajectory of many villages of Sudanian and Guinean savannas (for example in southern Mali, see Brottem (2016)).

2.3. Changing balance between two kinds of property regimes

For years, two types of property regimes have coexisted spatially and temporally in Poykoro: open property of forage, water, timber and non-timber forest products in permanently or temporally uncultivated areas (forests, harvested fields or orchards, fallows, bush streams and ponds); more exclusive property of cultivated fields and orchards, and domestic wells. Ongoing changes in land uses are leading to the extension of exclusive rights (to fields and orchards) on an increasing proportion of the village territory and a symmetrical decline in open property.

Because land was abundant, access to pastoral resources used to be easy. No authorization was required from anyone to graze animals in large parts of village territories. Pastoral resources are shared resources ruled by non-exclusive access, but labeling them as commons is erroneous. With no organized communities of users or governance structure, Sudanian and Guinean pastoral resources do not fulfill Ostromian prerequisites of commons (Ostrom, 1990). Access to pastoral resources stems from open property regime (Moritz, 2016), where no one can be excluded and where competition is regulated by mobility.

Village territories occupied by bush and old fallows are under the loose control of the land master, although his authorization, and the related rituals, remains required for opening new fields. When cleared, lands become incorporated in extended family or household holdings, and are subject to more exclusive rights. Investing work to clear a new piece of land grants the clearer exclusive rights for cultivation: no one else can grow crops there without the clearer's agreement. The degree of exclusivity depends on the amount and length of the investment. While digging a well or planting trees grant permanent rights, clearing for annual crops only allows exclusive cultivation the following year, but controlled access stops at harvest: harvested land is then open to everyone's cattle. Moreover, if no new work is invested, the rights progressively evaporate, and old fallows are then open for a new clearer.

Access to grazing resources has not changed and is still based on open property. But growing pressure on land has resulted in dramatic changes in the balance between open and exclusive property.

3. What Does "Right" Mean in Open Property Regimes?

3.1. Open property: an under-studied property regime

The opposition between Hardin (1968) and Ostrom (1990) over the so-called "tragedy of commons" established rangelands as a canonical example of commons. It is true that access to wells in some semi-arid areas may be regarded as commons (Thébaud et Batterbury 2001), and that some authors acknowledge the existence of "new pastoral commons" (Bollig et Lesorogol 2016). Nevertheless, in many cases access

³ INSD, *Population Census 2006*.

⁴ Field data.

to pastoral resources does not reflect the canonic definition of commons: a community, a resource, and a governance institution. At the same time, some authors argue that access to pastoral resources may not be considered open access (i.e. a situation in which there are no rules at all). Access to pastoral resources is thus often described as hybrid and mixed forms of property institutions (Turner 2017), and Moritz (2016) uses the term “open property regime” to describe pastoral situations where no one can be excluded and where mobility is the main strategy for avoiding conflict and regulating pressure on resources.

Open access has been seen as a synonym for anarchy, and as a basic initial state. It is distinguished from the three other resource governance systems, often regarded as more sophisticated: commons and especially public property and private property (Feeny et al. 1990), that are supposed to emerge as a logical outcome of population growth and of an increase in the value of land. However, open access should not be considered as pure free access, with no rules at all (Moritz 2016). It is a specific property regime, under which no one can be excluded. Moritz’s data originated from semi-arid land, where the distribution of resources is highly variable and uncertain, there is little competition for resources, and pastoralism is dominant: these conditions enabled resource users to share an “ethos of open access” (Moritz et al. 2013). The essence of the “ethos of open access” is rooted in inclusion, not exclusion. Pastoralism relies on movement at regional scale, and on the fact that everyone has access to vast spaces. Thanks to open property, herders do not need to negotiate with local residents or to meet preconditions to graze or water their animals. All those who have the capacity to move may benefit from potential access to a great amount of resources.

Moritz admits that “[open property regimes] do not regulate access to these resources between pastoralists and non-pastoralists” (2016: 16). In another case – the shores of Lake Chad, which is a non-equilibrium ecosystem with strong imbrications of agricultural, fishing and pastoral uses – Rangé and Lavigne Delville (2019) show that access to land, fish and pasture can be best characterized as an “authorized open access regime”. In such a regime, everyone can gain access to these resources but has to ask for permission and pay fees to customary and administrative authorities. Poykoro, and more broadly the Sudanian and Guinean savannas of West Africa, differ from these two cases because pastoralism is the secondary activity after farming. As we have seen, open property has to face the farmers’ more exclusive property regime. These two property regimes do not follow the same rules.

3.2. A theoretical framework to specify what is a right in open property regimes

Farmers’ rights may be considered as rights in Alchian and Demsetz’s canonic definition (1973, 17): legitimate actions that are socially authorized and guaranteed by a legitimate regulatory structure if they are contested (Colin 2008). From this point of view, cultivating contrasts sharply with grazing or watering cattle, which are never formally authorized by any power. Clearing of bush for cultivation is always preceded by a ritual sacrifice – even when clearing is for herders’ fields. But no ceremony ever enshrines something such as a right to graze (Gonin 2014, 258). In such contexts, speaking of a right to graze may be challenging and requires further investigations of what is a right in open property regimes.

The standard interpretation of the difference between farmers’ and herders’ rights relies on the idea that investment creates rights. Pastoralists use pastoral resources but do not invest work to produce them, in contrast to farmers who have to clear the land, and then plough, sow and weed before harvesting. While this can explain the strength of farmers’ rights, it does not explain why the expansion of agricultural land faces no obstacles and why the reduction of rangeland is not seen as a problem for farmers even when their own cattle face difficulties. We thus need to go further in analyzing not only the differences, but also the relations between these two kinds of property regimes. Our aim is to analyze what each actor involved in current land use dynamics in Poykoro may or may not do – farmers as well as herders – and to establish to what extent these possibilities and impossibilities may be called rights. This is where the seminal work of Wesley Newcomb Hohfeld (1913) is helpful.

Indeed, Hohfeld’s ambition was to break down what people loosely call rights into unambiguous pieces. Hohfeld’s project was to create an analytical framework, where the legal positions of actors are connected by purely logical relations of entailment and negation (Kramer, Simmonds, et Steiner 1998). The Hohfeldian framework is a contribution about how to think, not what to think: Hohfeld did not attempt to prescribe or recount the substance and the distribution of actual entitlements. Over time, many complex visions (and reinterpretations of) the Hohfeldian framework have been proposed in an abundant literature (Duarte d’Almeida 2016), some of which even tested its validity (Brown 2005). In this article we provide a simple, accessible account of Hohfeld’s framework.

While a right is often seen as an attribute of the actor, Hohfeld suggests that it is relational. A Hohfeldian legal relation is always a relation between two persons (*A* and *B*) concerning a specific act (*X*). What *A* may do or not do is related to what *B* may or may not do. Hohfeld describes four kinds of “entitlements” (claim-right, liberty, power, and immunity) and four kinds of “disablements” (duty, no right, liability, and no power).

For each entitlement there is always a unique and distinct correlative disablement held by the other actor, and *vice versa* (Schlag 2015, 188): in other words, “legal correlatives” are legal positions that are entailed by each other. Conversely, Hohfeld calls “legal opposites” two legal positions – i.e. an entitlement and a disablement – negating each other.

A **claim-right** is a legal right to insist that someone else do or refrain from doing some action with a corresponding duty in that person. To say that *A* has a claim-right against *B* to have *B* do something (e.g. give something to *A*) is to state that *B* has the duty to do it (Smith 2011). Every claim-right correlates with a duty in (at least) one duty-bearer. What is distinctive about the claim-right is that a duty-bearer’s duty is directed at or owed to the right holder. Obviously, a claim-right can require duty-bearers to refrain from performing some action. Let us take the simple example of a shell on a beach. If *A* has a claim-right to pick up the shell, it means that *B* has the duty not to pick it up.

A **liberty** is very different and entails a far more nuanced situation. *A* has a liberty to do *X* if he has no duty not to do it. In other words, *A* will not be violating any duty should he decide to do *X*: in our example, he is free to pick up the shell. Now what are the consequences of such an entitlement vis-à-vis *B*? Firstly, there is a consequence related to the protection of the entitlement. Certainly, *B* has no right to prevent *A* from picking up the shell; but this does not mean that *B* has the duty to let *A* pick up the shell. *A*’s liberty to do *X* does not afford him any legal remedy when *B* does something that prevents *A* from doing *X*. On the contrary, a claim-right establishes the predicate for a legal remedy: *A* may go before an authority (for example a judge) and show that *B* has not fulfilled his duty toward him, and the authority has to draw the consequences from this situation. Secondly, there is no consequence related to what *B* may or may not do. In other words, the fact that *A* has the liberty to pick up the shell does not in itself say anything about *B*’s situation regarding the shell: if *B* has himself the liberty to do so, he may pick up the shell if he so wishes.

Hohfeldian **power** means that “*A* may voluntarily create a new legal relation affecting *B*” (Bromley 1989, 45). In our example, this is what happens when *A* waives his claim-right to the shell (and the duty of *B* to not pick it up disappears), or when *A* is allowed to revoke *B*’s liberty to pick up the shell. In these two situations, *B* has a liability in that *B* is subject to the new legal relation created by *A*.

Conversely, **immunity** means that “*A* is not subject to *B*’s attempts to voluntarily create a new legal relation affecting *A*” (Bromley 1989, 45). This means that *B* has no power over *A* regarding *X*. In our example, this is what happens when *B* may not challenge the claim-right or liberty of *A* to pick up the shell.

Claim-rights and liberties define “primary rules” (Hart 1961): rules requiring that people perform or refrain from performing particular actions. We contend that these two legal positions are *static*, as the legal relation between two actors is fixed and may not be changed by one of them. On the other hand, power and immunity define “secondary rules” (Hart 1961): rules that specify how actors can introduce and change primary rules. We posit that these two legal positions are *dynamic*, because the legal relation between two actors may evolve on their own initiative (see **Tables 2** and **3**).

Table 2: Hohfeld’s legal relations (correlates).

	A’s	B’s
Static correlates	Claim-Right	Duty
	Liberty	No right
Dynamic correlates	Power	Liability
	Immunity	No power

(after Hohfeld 1913, and Bromley 1989).

Table 3: Hohfeld’s legal relations (opposites).

	A’s	B’s
Static opposites	Claim-Right	No right
	Liberty	Duty
Dynamic opposites	Power	No power
	Immunity	Liability

(after Hohfeld 1913, and Bromley 1989).

4. Access “Rights” And Their Dynamics in Densifying Agro-Pastoral Areas

In this section, we discuss the capacity of Hohfeld’s framework to (i) specify the characteristics of open property in a context increasingly dominated by exclusive regimes, then (ii) to highlight the mechanisms of transformation of property regimes along with field expansion. We use here “farmer” or “herder” as activities and roles, not as communities or identities: all herders and transhumant herders in Poykoro are also farmers; many farmers (among the wealthiest) are also herders.

4.1. Open property in Poykoro: a matter of liberty

What are the rules governing the access to pastoral resources by herders? Herders say that they can graze anywhere on uncultivated land. When interviewed, other actors judge that they may not prevent a herder (local or transhumant) from accessing a village’s rangelands. In Poykoro, herders have no duty not to access rangelands. And other actors – even the land master who exerts territorial control – have no right to prevent them from accessing them. In Hohfeld’s words, herders have the liberty to access any grazing resources in order for their cattle to graze.

Would it be possible to say that herders have a claim-right to use grazing resources? Here, things get more complicated. Consider in our case the potential implications of a land use claim-right of a herder vis-à-vis all other actors. A first proposition could be: a claim-right to use rangelands implies that “all (or at least some) other actors have the duty not to access and use rangelands”. A second proposition could be: a claim-right to use the land implies that “all (or at least some) other actors have a duty to let herders access and use rangelands”.

Clearly, our data does not allow us to conclude that the first proposition is true. Exclusivity does not belong to any user group. All kinds of herders (local farmers who own cattle, settled herders, transhumant herders) may enter the rangeland. Wood cutters can use the forest at the same time. Even use change through clearing is possible.

According to our data, the second proposition cannot be validated either. It proved impossible to find evidence that “all (or at least some) have a duty to let herders use rangeland”. During interviews, no rule was ever expressed *ex ante* or acknowledged *ex post* (i.e., through a conflict) that would convey the sense of farmers that they bear a duty not to clear a forest where herds are grazing, if land authorities allow them to do so. No oral agreement – not to mention a written contract – stipulates that local herders have an obligation to let one of their own or a transhumant herder graze in a forest. No conflict leading to a trial before a traditional authority was mentioned during our interviews. Crucially, customary land authorities consider that they do not have the jurisdiction to grant rights and enforce duties when the matter deals with pastoralism. This absence of claim-right and corresponding duty on rangelands observed in Poykoro is widespread in Sudanian and Guinean savannas in western Burkina Faso, as showed by data collected in a previous study (Gonin 2014). There are exceptions: herders have a right (enforced or not) to graze in state ranches, or in privately owned rangelands (as rare in Western Burkina Faso as elsewhere in West Africa). However, these situations remain the exception. Generally, pastoralists are considered as “strangers” in farmers’ political communities (Hochet et Arnaldi di Balme 2012) and cannot rely on a customary institution of their own to enforce access to grazing resources. In Poykoro, they do not even have social contracts with farmers’ families who would grant them rights in a logic of political alliance and reciprocity.

The Hohfeldian framework enables us to understand what underlies the (apparently) slight difference between saying that “nobody has the right to prevent herders from using rangelands” and saying that “everyone has the duty to let herders use these lands”. In practical terms, there is a fundamental difference. Nobody has the right to prevent herders from using rangelands until they become farmlands used exclusively by farmers during the rainy season (see 5.2). If everyone had the duty to let herders use these lands, no one could clear a forest where cattle graze. So, in Hohfeldian terms, herders have a liberty, and not a right of access to pastures.

Rangelands are not the only spaces herders may use. Under certain circumstances, they may also let their cattle graze in plots belonging to farmers. Many farmers do not rule on access to crop residues after the harvest or to orchards during the rainy season. In these cases, it may be argued that herders also have a liberty to graze in harvested fields or harvested orchards. However, this liberty is subject to farmers’ power to refuse it, a position which is becoming increasingly frequent where pressure on grazing resources is high. In these places, crop residues have become a resource for farmers, who use them for their own cattle or sell it to urban sheep owners, leading to a renegotiation or the end of manure contracts (Van Driel 1999). Herders do not have any way to contest a farmer’s potential refusal and are liable to respect such decisions.

The situation seems clearer in the case of ponds and (at least some) wells in the dry season. Each herder benefits from the liberty to water his cattle at the well which is closest to the village, at bush watering holes

Table 4: Hohfeld's legal correlative relations applied to access to pastoral resources.

Access to pastoral resources	Prevailing type of relation	Herders (A)	Farmers (B)
Rangeland	<i>Static</i>	Liberty	No right
Conversion to agricultural land	<i>Dynamic</i>	Liability	Power
Forage in cultivated plots in the dry season and in orchards in the rainy season	<i>Static</i>	Liberty	No right
Enclosure of cashew orchards	<i>Dynamic</i>	Liability	Power
Ponds and pastoral wells	<i>Static</i>	Liberty	No right
Domestic wells	<i>Static</i>	Duty	Claim-right

Source: authors.

(in the dry season), ponds or streams (in the rainy season). In other words, no one has a right to exclude a herder from a watering point. All interviewees asserted that the well owner – or the watering hole digger himself – may not prevent an herder from watering: the digger enjoys no exclusivity or even priority access. “There is no protocol” as the saying goes. This assertion matches our own observations of watering points: the principle “first come, first served” is the standard procedure. Moreover, herders have the liberty to dig watering holes in the streambeds. During interviews, all herders asserted that no one has the right to prevent someone from digging a water point, a fact that was confirmed by local authorities.

By contrast, access to two wells and two boreholes located close to the village of Poykoro that are used for domestic water and vegetable gardening follow a radically different logic. Women who draw the water have, against herders, a right of access. The correlative is that herders bear the duty not to prevent women from drawing water; they even bear the duty not to water their cattle, which means that they have no liberty in this matter. All interviewees acknowledged the rule that reserves these wells and boreholes for domestic use and gardening. These four water points are those that never dry up. In January/February, when other wells, ponds and slump progressively dry up, many herders leave Poykoro. They do not force access to reserved wells and boreholes, further evidence that they recognize the validity of their duty (Table 4).

4.2. From open to exclusive property: a matter of power and liability

The open property regime described above has undergone significant transformations over the last twenty years in Poykoro, as has generally been the case in Sudanian and Guinean savannas. Open access resources were predominant twenty years ago. They have decreased drastically since; meanwhile, the number of their potential users has increased. A larger part of the territory is ruled by exclusive property regimes (at household or extended family level) as forests are transformed into fields or orchards. How does open access evolve in its coexistence with exclusive property in this context?

Herders who benefited from a liberty of access to rangelands have the duty to stay off these lands once they are cultivated. Symmetrically, farmers who were initially not entitled to exclude anybody from using rangelands have obtained the claim-right to exclude herders from their cultivated fields in the rainy season, and cashew producers have a claim-right to exclude herders from their orchards in the dry season. Jurisprudence confirms that the situation is a claim-right/duty relation, and not a liberty/no right relation. If cattle enter a cultivated field or an orchard in production and damage the crop, and if the case is brought before a traditional or legal authority, herders are systematically held liable. Even if herders happen to question the claim-right of farmers, they are always found to breach the duty of not entering a cultivated plot, and generally ordered to financially compensate the farmer. In Poykoro, like elsewhere in western Burkina Faso, the (sometimes violent) protests by herders against farmers' rights (damaging crops may be a herders' strategy to contest the cultivation of a former rangeland) usually prove to be ineffective.

Consequently, the proposition “nobody has the right to prevent herders from using the land” only applies as long as these areas remain uncleared: farmers are granted the right to prevent access as soon as they clear the forest to farm these lands. This paradox may be resolved if one considers that pastoralists do not have the liberty to use land, but the grazing resources on the land. When farmers convert these lands to farms, the grazing resources (grass) are no longer there.

The shift from rangelands to farmlands is enabled by the customary land authorities. The territorial control exerted by such authorities does not include the right to exclude herders from access to uncultivated

land for grazing, but includes the right to authorize land clearing (provided that necessary rituals have been performed) and thus a change in use that goes along with the revocation of herders' liberty to graze on this piece of land. Herders cannot prevent clearing and their subsequent exclusion. Farmers have the power to change the relation with herders, who are liable to respect farmers' will.

Another kind of enclosure is gradually emerging that is not justified in the same way. We have seen that while cashew producers have the right to exclude herders from their orchards during the dry season (when the nuts are being harvested) herders usually benefit from the liberty to let their cattle graze under the cashew trees in the rainy season (when the harvest is over). Nevertheless, some cashew growers are fencing their orchards in to prevent damage to the crop in the dry season; and the fences remain in place all year round, consequently depriving herders of grazing in the rainy season. Beyond their physical function, fences play a performative role (Blomley 2013). They assert farmers' right against herders by embodying it, making it visible. They finally make the exclusive property become real. We might argue that by building a fence, cashew producers exercise their power and revoke the herders' liberty of access.

Overall, by extending their agricultural land, farmers' families have gained claim-rights over larger portions of village territory, and herders have lost their liberty of access to a lot of land and resources whose status has changed from open property (for farmers and herders, first and late arrivals) to exclusive property (for farmers' groups or families). But increased pressure on grazing resources has not resulted in more exclusive rights to pastoral resources. Two different processes are at stake: (i) a change in the balance between rangeland (still under open property) and cultivated land, subject to more exclusive rights, due to clearing; (ii) a trend toward more exclusive rights on farmland, due to the farmers' power to enclose their orchards, leading to the exclusion of herders during the rainy season. In both cases, herders have no immunity. They cannot prevent farmers from changing their relation with them. They are bound to adapt to new relations resulting from land clearing and orchard fencing.

5. Discussion

5.1. Contribution and limitations of the transposition of Hohfeld's framework for the analysis of changing access to pastoral resources in rural West Africa

Although challenging, the transposition of Hohfeld's framework in contemporary rural West Africa helps to specify legal relations between producers concerning resources (the distinction between claim-right and liberty), and their evolution (legal power relations). Hohfeld's framework also sheds new light on the unequal relations between farmers and herders. For the farmers, working creates claim-rights: other actors are bound to respect the work invested by a farmer in his plot and the output produced. This falls within the scope of Hohfeld's claim-right/duty relation. Access is better secured for producers who hold claim-rights, but this excludes those who bear duty not to trespass. Grazing does not create such a relation, for two reasons at least. On the one hand, pastoral work does not transform the landscape in an obvious way, which does not facilitate farmers' acknowledgement of rangelands. On the other hand, as we saw earlier, pastoral mobility relies on the fact that everyone must have access to vast spaces. Consequently, access to pastoral resources cannot be ruled by an exclusive claim-right/duty legal relationship: it must remain open for all, and rather fall within the scope of a more inclusive liberty/no-right relation. From this point of view, the "tragedy of open access" is not environmental, but socio-political: grazing resources are indeed shared resources, but they are not under the control of an authority that would represent the herders and could protect their liberty of access. Rangelands are thus not territories in Sack's sense (1986) of politically controlled areas.

Hohfeld also allows us to understand the structural weakness of herders' access to pastoral resources, and their legal incapacity to oppose the expansion of fields for crops. A's capacity to change the legal relation between itself and B is part of his analytical framework. A liberty is easier to challenge than a claim-right and no authority can be mobilized to protect it. Liberties are not as secure as claim-rights.

For Hohfeld, power is part of legal relations. But would it not be simpler to explain the reduction in rangeland by the weakness of herders in local power relationships? Actually, in the field, the distinction between legal power and power relationships is often blurred. Let us take the case of fencing in orchards. Field data do not make it possible to clearly state whether producers who build a fence around an orchard are engaging in a pure power relationship or if they are exercising legal power. Herders' liberty to graze in unfenced orchards could well be analyzed as mere tolerance, cashew producers having a right of exclusion applicable in all seasons but only lacking the technical capacity to enforce it. In this case, the power does not clearly stem from pre-existing legal rules. The qualification of any legal relation is thus a matter of interpretation. However, Hohfeld's framework provides a helpful complement to the analysis in terms of

power relationships. The fact that herders may not be excluded from uncultivated rangelands (i.e., farmers, and other herders have no right of exclusion) cannot be adequately explained by power relationships approaches alone.

Farmers have the right to clear new plots and the power to alter herders' access to these plots. Herders have no immunity against this. As a result of the structural weakness of their entitlements, herders facing less pastureland have no other choice than to move to regions with more extensive rangelands. The shrinking of resources under open property particularly impacts Fulbe farmer-herders, whose livelihoods depend primarily on herding. They generally move to areas under low pressure. But this cannot remain a viable option for long as competition over resources is intensifying in almost all Sudanian and Guinean areas.

5.2. How to preserve access to pastoral resources?

If one agrees that such a dynamic is problematic, what could be the alternatives? What kind of legal changes could allow a long-term access to pastoral resources in farming areas? As T. Bassett noted (2009, 765) « whether or not the FulBe will be able to maintain access to rangelands in the future will be contingent upon their engagement in the tenure building process ». Preserving access to pastoral resources requires to create pastoral territories within farming areas, i.e. clearly delimited and controlled rangelands where herding is recognized as the main land use and where clearing is forbidden.

From a Hohfeldian point of view, enforcement of such pastoral territories in farming areas relies on the transformation of herders' liberties into claim-rights, and reciprocally, the farmers' no-right into duty not to clear. These areas would be protected from the surrounding widespread farming activities, thanks to a claim-right/duty relationship. Herders would benefit from claim-rights, whereas farmers would bear the duty of not clearing or enclosing these pastoral territories. Such territories could be internally managed like a common (with institutions laying down rules of use and specifying the rights of stakeholders) or remain under an open property regime (each herder keeps a liberty against the others). Pastoral territories would be more open to transhumant herders in the latter case than in the former. This transformation is pending on an actor's power to redefine others' access. Which actor could gain and exercise such a power? Three solutions may be considered.

Herders could themselves negotiate with farmers and local land authorities to gain legal power on pastoral resources. The pastoral area of Barani, at the north-west of Burkina Faso, proves that is possible. Originally supported by a project, local herders managed to delimitate and to rule a pastoral territory, where their rights to graze and to water have been respected for 25 years (Gonin 2018). Like in a common, local territory management comities ensure that claim-rights and duties are enforced. All local and transhumant herders can be granted access rights against the payment of entrance fees. However, Barani is an exception, linked to an historical FulBe kingdom. It seems that pastoral territories remain difficult to negotiate in Sudanian and Guinean savannas. The fact that herders' liberties are weakening while farmers' rights are expanding is because the latter clearly dominate local power relationships. This can be explained by two factors: (i) access to land and resources is linked to social identities and territorial control is exerted by farmers customary authorities; (ii) claims over land and natural resources are legitimated by the work invested, making farmers rights stronger than those of other natural resources users. The priority to farming land use has been strengthened by the cashew boom. To clear the forest to grow cashew trees has proven to be more profitable than to preserve them for herding. Farming is then highly valued from economic, political and cultural point of views. Such a context explains the difficulties herders face in negotiating claim-rights of access besides their liberties.

Another strategy would consist in gaining the support of an external authority that would exercise its power over natural resources and balance farmers' and herders' interests. The authority would define pastoral territories within farming areas, and enforce herders' right of access to them. The external authority could be the State, but history shows that it is often inefficient in enforcing such rights. For example, the State of Burkina Faso fails to ensure the rangeland integrity of pastoral territories that were created in the 1970s (Gonin et Gautier 2015).

A third strategy could be to promote local land use policies that specify which and where uses are possible, and that forbid farming in specific territories dedicated to pasture, timber and collection of non-timber products. Such policies could rely on municipalities resulting from decentralization, and/or local *ad hoc* management committees gathering customary authorities, farmers and herders. Such a perspective requires that these authorities have both an interest in continuing to protect part of forests and rangeland from clearing, and the power to enforce the new rules. The argument for appeasement of conflicts between farmers and herders or intensification of relations between herding and farming could convincingly support

this change. Local farmer-herders who see the interest of this kind of territory for their own cattle may support such a municipal policy. But local government authorities – who are mainly elected by and beholden to farmers – would have to deal with the interests of other farmers as well as of land buyers investing in orchards. In areas where the pressure to expand agricultural land is high, reserving parts of municipalities' territories for pastoralism is likely to have a high political cost. The protected areas risk being too small to welcome both transhumant and local herders. Moreover, local farmer-herders could claim exclusive access for themselves, and exclude transhumant herders. While this third strategy – which is promoted by development projects supporting pastoralism – may seem more realistic, its implementation is difficult in any case.

6. Conclusion

In this paper, we first show that, in Sudanian farming areas, access to pastoral resources is most often better characterized as open property regime than as common property regime. Then we explain why, as lands under exclusive access are spreading to the detriment of lands under open property regime, herders meet difficulties to preserve their access to pastoral resources. To do so, we apply Hohfeld's framework to relations between farmers and herders in Poykoro. We believe this framework to be relevant for other, similar cases in which herders and farmers compete for resources. In a relational perspective, Hohfeld discusses the relations between what interdependent actors may or may not do. He shows that a claim right can exist only if the others have the duty to respect it. One of our main results is to demonstrate that herders are not granted a claim-right but only a liberty to use grazing resources. If “nobody has the right to prevent herders from using rangelands”, one could not say that “everyone has the duty to let herders use these lands” (which would be the correlate of a claim-right). The herders' weakness to preserve their access to pastoral resources lies in a large part in this difference between farmers' claim-right and herders' liberty in context of increasing pressure on resources. It could be possible to enforce pastoral claim-rights within pastoral territories, but political conditions to create such territories are nowadays adverse in Sudanian and Guinean West African savannas.

Acknowledgements

This research benefited from a grant made by the “Comité technique foncier et développement”, funded by the French Agency for Development (AFD) and the French Minister for Europe and foreign affairs (MEAE).

Competing Interests

The authors have no competing interests to declare.

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How to cite this article: Gonin, A., Filoche, G., & Lavigne Delville, P. (2019). Dynamics of Access to Pastoral Resources in a Farming Area (Western Burkina Faso): Unveiling Rights in Open Access Regimes. *International Journal of the Commons*, 13(2), pp. 1049–1061. DOI: <https://doi.org/10.5334/ijc.950>

Submitted: 19 December 2018

Accepted: 25 May 2019

Published: 30 October 2019

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