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SPATIAL ANTICOMMONS IN PASTORAL LANDS OF KENYA

ERASTUS K. MUSELEKU
Department of Real Estate and Construction Management
University of Nairobi, Nairobi, Kenya

ABSTRACT

This paper uses mainly secondary data and personal structured observations and experiences. In essence, the paper explains how the theory of the spatial anticommons is applicable in the dry agricultural lands where extensive livestock production systems are the most dominant. Most of the existing reviews and comments on this theory have been on the arable agricultural land and not on the dry agricultural land, the bulk (over 80 percent) of the Kenya's land mass. This paper therefore demonstrates that the theory of the anticommons is applicable in the dry agricultural lands of Kenya. Basically, privatization and subdivision of agricultural land into small sizes should be discouraged to avoid tragedy of the spatial anticommons. This is because it has been observed elsewhere that even though spatial anticommons properties are not necessarily tragic in the short run, they are likely to become tragic in the long run. The national and county governments should thus put in place appropriate and clear policy, legal and institutional frameworks to prescribe allowable minimum economical/optimal agricultural land sizes in various agro climatic zones in Kenya. The minimum agricultural land sizes should be based on a scientific study. Since it is difficult and unnecessary to reverse agricultural land privatization trends, in any case it is assumed to be a cure of the tragedy of the commons and it fosters economic development, individual titles should have restrictions on the minimum allowable sizes depending on the location and use of the land. Where agricultural land is used for extensive livestock production system, for example, large tracts should be encouraged unless and until the owner wants to change the user. The legal framework for physical planning and registration of land in Kenya such as the Land Registration Act and the Physical Planning Act should thus make it mandatory that allowable minimum agricultural land sizes are adhered to before creation and registration of new titles. Other policy interventions may include large plot zoning, agricultural land zoning and public facilities requirement ordinances, among others.

***Key Words**: Anticommons property, subdivision of dry agricultural land, pastoral lands*

INTRODUCTION

Globally, agriculture remains the single largest employer and provides livelihoods for more than 40 percent of the globe's population. Besides, agriculture is the world's largest source of income and jobs for rural communities. Agricultural land, including the dry one, therefore, remains a key resource for the rural communities as well as urban dwellers. Thus, the size of agricultural land is as important as the distribution and access to this resource.

In Kenya, over 70 percent of her population reside in rural areas and obtain their livelihoods from agricultural land. The agricultural sector in Kenya directly contributes about 26 percent to the Gross Domestic Product (GDP) annually and accounts for approximately 65 percent of the national total exports. It creates over 70 percent of informal employment opportunities in the rural areas thus making it a backbone of Kenya's economy. Agricultural land in Kenya therefore plays a key role in poverty reduction in the lives of vulnerable groups such as the pastoralists and subsistence farmers who derive their livelihoods mainly from agricultural activities (GoK, 2009; 2017).

Kenya's landmass is approximately 582,646 square kilometres of which about 98 percent is land and 2 per cent is water surface. Only about 20 percent of Kenya's land is arable while the bulk of the land (over 80 percent) is arid or semi-arid (ASALs). Besides, about 75 percent of the Kenya's populace reside in the arable agricultural lands, thus contributing to high population densities in those lands (GoK, 2009). Essentially, the medium to high potential agricultural land in Kenya is already subdivided into small units which may be uneconomical for agricultural production.

The theory of anticommons explains a scenario whereby too many rational profit-maximizing exclusive users or individuals, each acting separately, collectively wastes a scarce resource by blocking each other from use leading to underutilization of resources (Heller, 1998; Michelmann, 1982). The theory of spatial anticommons describe land subdivisions when "each anticommons owner receives a core bundle of rights, but in too little space for the most efficient use in given time and space" (Heller, 1998). Efficient agricultural production, including extensive pastoralism systems, requires large contiguous land to enable economies of scale and synergy (Robson, 2012). These requirements may be absent when the agricultural land is privately owned in small sizes and fragmented by idle lands or non-agricultural land uses, leading to increased agricultural production costs and reduced agricultural productivity, a tragedy of spatial anticommons.

Consequently, agricultural land, including dry one, may be transformed into an underproductive asset, tragedy of spatial anticommons, when the agricultural land is subdivided into small sizes and owned by many different private individual entities (Robson, 2012; Heller, 1998; GoK, 2016; Syagga & Kimuyu, 2016; GoK, 2009; Lee, 1999; Henry *et al*., 2012). In Kajiado County, one of the Kenya's dry area, for instance, Syagga & Kimuyu (2016) established that the minimum agricultural land size should be approximately 6.39Ha. This minimum agricultural land size is required for maize (Kenya's staple crop) production to support an average sized household in the County. Besides, such agricultural land subdivisions may occur in remote areas without basic services to support alternative land uses such as residential user. Essentially, such agricultural land subdivisions may be untimely and may not benefit either the agricultural landowner or the community at large. In addition, the subdivisions of agricultural land into small units, sometimes below economic sizes may eventually occasion conversions of agricultural land into non-agricultural uses thus reducing agricultural land base (Museleku, 2013).

There may be no consensus on what should be the minimum/economical size of agricultural land but it is globally acknowledged that small agricultural land sizes may have negative impact on agricultural

productivity. This is evidenced by attempts by various countries in the world, Kenya included, to regulate on minimum agricultural land sizes (see table 1 below).

Table 1: The Minimum agricultural land holding ceilings in selected countries

ASIAN COUNTRIES	
India	3.6 ha varying with the conditions and between states
Indonesia	5.0 ha irrigated land, 6.0 ha upland, varying according to population density
Nepal	2.7 ha for owner-cultivated holdings and from 0.5 ha for tenanted land
Japan	3.0 ha
Korea	3.0 ha
Taiwan	3.0 ha
The Philippines	1.2 ha
LATIN AMERICAN COUNTRIES	
Brazil	Less than 2.0 ha
Mexico	1.6 ha per cow on poor quality pasture land
AFRICAN COUNTRIES	
Egypt	1.0 ha
Rwanda	1.0 ha
South Africa	In the process of enacting a policy to prescribe land size holding ceilings
Kenya	1.0 ha, as per the Minimum and Maximum Land Holding Acreage Bill, 2015. Kenya, however, is in the process of enacting a law to prescribe land size holding ceilings

Source: Syagga & Kimuyu, 2016, with adaptations

Generally, however, minimum floor ceiling on agricultural land has been pegged at 1ha (approximately 2.5 acres) or more depending on various factors like whether the agricultural land is irrigated or arable, type of crop planted, scale of operation, among other factors. These benchmarks are however meant for crop production. The minimum floor agricultural land sizes may shift upwards if extensive livestock pastoralism is the main agricultural land use activity, as it is the case in the drylands of Kenya.

THEORY

The theory of the anticommons was first introduced by Frank Michelmann (1982) and then developed and popularized by Michael A. Heller (1998) to explain a situation whereby a resource has too many exclusive users who prevent others from utilizing it thus resulting to underutilization of the resource to the detriment of the social welfare of the community (Heller, 1998). Michelmann (1982) defines anticommons property as "*a type of property in which everyone always has rights respecting the objects in the regime and no one, consequently, is ever privileged to use any of them except and particularly authorized by others"*.

Heller (1998) in his article on 'The tragedy of the anticommons: property in the transition from Marx to markets, defines anticommons as "*a property regime in which multiple owners hold effective rights of exclusion in a scarce resource*". Thus, when too many owners hold exclusive private rights in a scarce resource like land, the resource is likely to be underused – a tragedy of the anticommons.

The theory of the anticommons mirrors the theory of the commons property whereby in a commons property too many users with the right of access and use of a given resource, and no user has exclusion rights over the others, lead to overutilization of a resource hence resulting to a tragedy of the commons. In this scenario, a community is impacted negatively by actions of many rational profit-maximizing individuals. Overgrazed common fields are examples of tragedy of the commons. Thus, whereas the tragedy of the commons leads to overutilization, the tragedy of the anticommons leads to underutilization of scarce resources.

Anticommons properties are accidentally created by governments when creating new property rights under political and economic challenges. This happens when the government creates too many exclusive property rights and decision makers who end up blocking each other from using a resource. Thus, the anticommons could be legal or spatial. Heller (1998) explained legal anticommons by using a case study of empty storefronts in Moscow, Russia which had too many owners (council, planning committees, architects, etc.) who ended up blocking each other from use thus resulting to empty/underutilized storefronts – a tragedy of the legal anticommons.

In spatial anticommons, "*each anticommons owner receives a core bundle of rights, but in too little space for the most efficient use in given time and space*" (Heller, 1998). Basically, the spatial anticommons explain land subdivisions into small sizes since the resultant subplots may be too small to support economies of scale in agricultural production and/or occur in remote areas lacking basic infrastructural facilities and services to support alternative land uses. Consequently, the small pieces of agricultural land may remain vacant or 'undeveloped' and may not benefit the individual agricultural landowners or the rural community at large.

Anticommons property rights may occur either simultaneously or sequentially. In simultaneous anticommons, multiple land rights holders exercise their exclusion rights independently but at the same time. Parisi *et al.* (2003) gives an example of several exclusive rights owners of small pieces of land that are required to be developed together in order to realize a joint venture project. In this case, each owner holds and utilizes exclusion rights at the same level of decision making.

In sequential anticommons, however, the owners excise their exclusion rights in consecutive stages hence are at different levels of decision making. Essentially, in sequential anticommons, the multiple exclusive rights holders exercise their rights in succession, denoting a pyramid-like arrangement. Sequential legal anticommons would arise in land if a fragmented freehold/fee simple title is held by several owners who in turn grant exclusive leasehold rights to others. Anticommons in dry agricultural land in Kenya is likely to occur simultaneously since most of the lands are held under private freehold interests.

Both commons and anticommons property regimes are not necessarily tragic. In anticommons regime, if there are no transaction costs, the owners can bargain with each other and find ways to overcome the problem of commons or anticommons property. In reality, however, there are transaction costs of even finding other owners who are willing to cooperate in pulling scarce resource together to overcome anticommons, for instance, in the case of land consolidation efforts. Secondly, communities locked in a system of anticommons can create informal strategies to manage anticommons property efficiently. In agricultural lands, for example, close-knit rural communities may informally agree not to fence off their small pieces of agricultural land so that they can be accessed and used for grazing as a whole. Finally, some properties are better managed as anticommons and not as private property such as roads.

Even though the commons and anticommons may not be tragic now, Heller (1998) postulates that both will eventually be due to positive transaction costs, rational behaviours of users and lack of perfect information. In a commons scenario, a tragedy is likely to happen when too many rational profit-maximizing individuals, each acting separately, collectively overuse a scarce resource since the positive utilities are not shared whereas the negative ones are borne by the community. In anticommons arrangement, too many rational individuals, each acting separately, collectively wastes a scarce resource by underusing it, to the detriment of

the society at large (Parisi *et al.*, 2003; Heller, 1998). The figure 1 below illustrates the full property rights spectrum by Heller (1999), with adaptations.

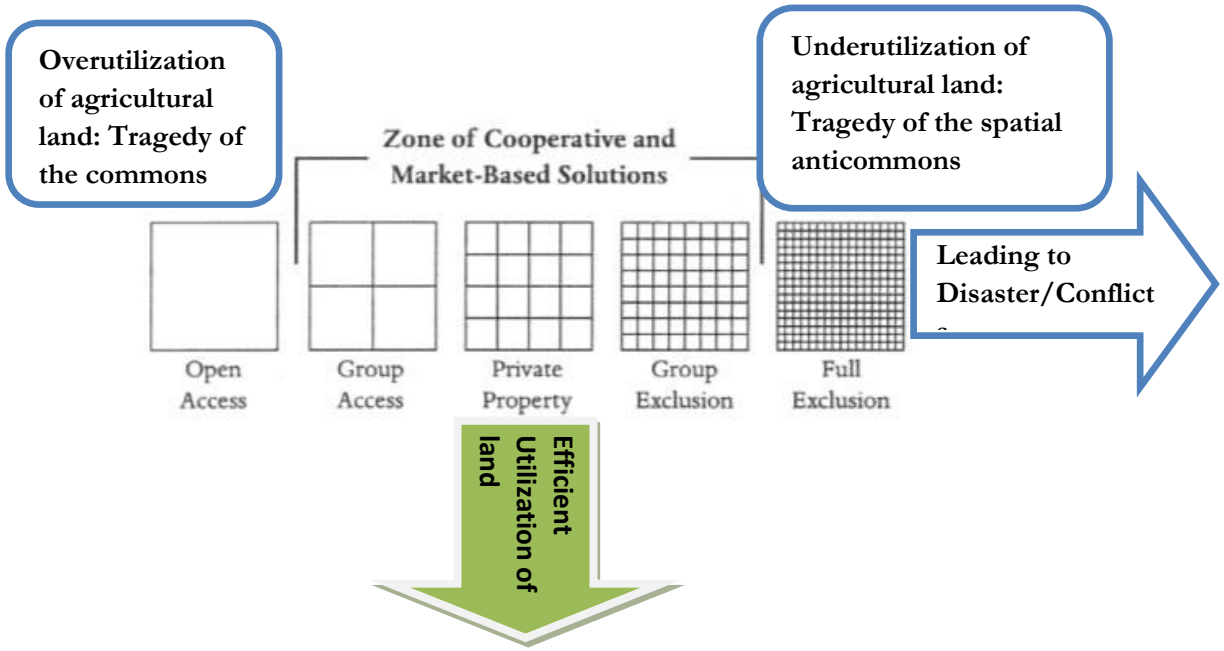

Fig. 1: The full spectrum of property rights

Source: Adapted from Heller, (1999).

Consequently, both the commons and anticommons property regimes bring more benefits to individual owners and fewer benefits to the community. When a herdsman adds one extra animal to a common grazing field, for example, he will gain all the profit resulting from the sale of the additional animal but he will share the effects of overgrazing with the other herdsmen. Similarly, an exclusive owner of a small sized agricultural plot benefits from excluding others by preserving the value of the plot for future sale (speculation) or for leasing it out in the future to earn rent, at the expense of the community at large. The costs of keeping the small agricultural plot vacant or "undeveloped" are less because the owner would only need to visit the site occasionally.

When the markets fail to correct problems of allocations in commons or anticommons scenarios, economic losses are likely to occur either in the form of overutilization or underutilization of scarce resources. As Parisi *et al*. (2003) suggest, anticommons arise due to mismatch between the rights of use and exclusion.

RESEARCH METHODS

The paper used mainly secondary data/review of the existing literature and personal structured observations and experiences. Non-participant direct observation of land parcels in dry agricultural areas such as the Kajiado County was done in a structured manner and data recorded in the process of observations using a note book. The unit of observation was the existing agricultural land sizes and their proximity to services, among other physical factors that may influence demand for agricultural land or the rate of subdivisions of dry agricultural land. Structured observation method is advisable since it eliminates bias and relates to current information which is not complicated by past events or future aspirations. Besides, it is not dependent with respondent's willingness to participate in a study, unlike in questionnaire method (Kothari, 2004). Consequently, structured observation was used to gather data relevant to the paper. In essence, the paper explains how the theory of the spatial anticommons is applicable in the drylands of Kenya where extensive

livestock production systems are the most dominant. Most of the existing international reviews and comments on this theory have been on the arable agricultural land and not on the dry agricultural land, the bulk (over 80 percent) of the Kenya's land mass.

RESULTS AND DISCUSSION

Spatial anticommons in pastoral lands of Kenya

The theory of the spatial anticommons is tied to the property rights systems used to administer and manage land resources. In the context of land, property rights include right to determine the type of use, subdivide, exclude others and conditions under which these rights can be exercised. The tragedy of the spatial anticommons occurs when agricultural land subdivisions result to small subplots that cannot support agricultural economies of scale and synergy (Robson, 2012). This is because for agricultural land to produce certain level of output there is need to use a minimum agricultural land size. The law of diminishing marginal returns underpins this assertion. Syagga & Kimuyu (2016), for example, established that the average minimum agricultural land required to support an average sized household in Kajiado County, one of Kenya's dry/arid and semi-arid land, is 6.39 ha. This minimum agricultural land acreage is needed to support a household relying on maize production in Kajiado County.

Thus, if agricultural land in Kajiado County is subdivided below 6.39ha, the maize output from the resultant smaller subplots owned by different people may not be sufficient to support the livelihood of a household, hence resulting to a tragedy of the spatial anticommons. Essentially, an economic transformation of the agricultural land would occur if agricultural land parcels measuring less than 6.39ha cannot produce adequate maize output to support an average-sized household in the County.

Buchanan & Yoon (2000) postulates that agricultural land subdivisions may ignore agricultural production or the resultant agricultural subplots may be too small to support economic agricultural use hence resulting to tragedy of spatial anticommons. This often occurs, as Robson (2012) puts it, when individuals creating and exercising exclusive rights to agricultural land, through private agricultural land subdivisions, do not appreciate the productive use of the agricultural land resource. Alternatively, the individuals holding exclusive agricultural land rights may lack personal interest to invest or use the land thus failing to capture the potential benefits of the resource. This scenario does not benefit either the agricultural landowner or the rural community at large, resulting to the tragedy of spatial anticommons.

Previously, land in Kenya was mainly owned communally (mostly in group or community commons) and it could be managed and used by the entire community, to the benefit of individual and the community at large. This system of land ownership, however, was considered to be hindering economic growth due to problems of commons property. To overcome this challenge, Kenya has continued to convert communal land rights to private land rights, as suggested by Hardin (1968). As a result, currently land rights in Kenya are mostly entrusted to individual entities (GoK, 2010).

The private property rights confer exclusive rights to hold, use, subdivide, sell and transfer property rights to the individual owner. Most of the agricultural lands, including dry ones, held under communal land tenure regimes have been subdivided and allocated to individual owners in form of freehold/fee simple private titles. This, the government and policy makers assumed, would spur economic growth. While the private property rights may encourage economic growth, the system can also lead to subdivision and fragmentation of agricultural land resource into small uneconomic sizes, especially if the rights created are held by too many exclusive owners and in disjointed small quantities.

In Kenya, land is categorised into public, community and private (GoK, 2010). Ownership of registered private land ensures exclusive possession and use of land, including dry agricultural land. This arrangement makes it easier for the agricultural landowner to trade in agricultural land. Whereas this regime encourages

economic development, it may also lead to transformation of agricultural land through subdivisions into uneconomic sizes (Parisi, 2002). This may occur when each agricultural landowner subdivides their agricultural land without taking into account the complimentary benefits of the resultant agricultural subplots.

In many parts of Kenya, dry agricultural land is being subdivided into small sizes which might be uneconomical (GoK, 2009; 2016). These subdivisions mainly occur on private land, most of which was created by subdivisions of communal agricultural land (Nkedianye *et al*., 2009; Mabea, 2014). Changes in rural and urban populations are assumed to be the key drivers of these subdivisions. This is because social practices of land inheritance are likely to encourage subdivisions of agricultural land, sometimes into uneconomic sizes. Besides, expansions of urban areas into agricultural areas coupled with demand for affordable housing by the urban population are also expected to influence subdivisions of surrounding agricultural land. Most of the agricultural drylands in Kenya, however, have low population densities and some of the new agricultural land subplots remain largely vacant or 'undeveloped' after subdivision hence putting to question these assumptions.

Subdivisions of agricultural land in Kenya into small subplots and subsequent sell-offs to non-community private individuals may create too many private holders of exclusive land rights, some of whom are absentee landlords. The new non-community private agricultural landowners may hold different economic aspirations from the indigenous community. Since the private land rights are guaranteed and protected by the Constitution of Kenya (2010) and various legal systems, the new non-community agricultural landowner may decide to fence off his land and leave it undeveloped for future trade in the value of the property (speculation purposes). Whenever too many such owners acquire land in a particular locality, agricultural land is fragmented and tragedy of the spatial anticommons may arise.

Agricultural land subdivisions into small sizes in drylands seem to ignore the productive potential of the agricultural dryland resource. Sometimes these subdivisions occur in remote areas that lack basic infrastructure to support alternative land uses or the resultant subplots are too small to support economic agricultural production. Therefore, the small agricultural land parcels remain largely vacant or 'undeveloped' since too many agricultural landowners hold plots of agricultural land that cannot individually support agricultural land use or alternative land uses, with potential to result to a tragedy of the spatial anticommons. Besides, this scenario may produce many agricultural subplots under dissimilar land uses whenever some are converted into other uses or in cases of absentee agricultural landlords.

When agricultural landowners compare the profits realized from sale of portion of their dry land and the time it would take to earn such profits from use of the land (usually extensive livestock production), it's only sensible that a rational owner will subdivide and sell-off a portion of his land to a willing buyer. Such decisions are based purely on profit-maximization motives (neo-liberalism propensities). As Robson (2012) opines, these decisions may appear harmless to the agricultural landowner but over time may produce too many small agricultural subplots that may not guarantee maximum agricultural productivity.

Agricultural production, including extensive livestock production systems, depends on use of land as a key input hence the size of agricultural land and distribution will impact agricultural productivity (Krugman, 1991 in Robson, 2012). Thus, many small agricultural subplots may yield less output due to problems of diseconomies of scale and synergy, which may subsequently lead to increased cost of agricultural production. Large agricultural land or farms are likely to experience reduced average production costs as the overhead costs are spread over a large farm area. The marginal returns are likely to occur in such a scenario. Besides, farm mechanization is possible in large farms thus increasing agricultural productivity.

Big farms in one area are expected to experience economies of synergy (Marsden *et al.*, 2002 in Robson, 2012). This is because it is possible to share information and knowledge, network and form cooperatives. Such an arrangement is likely to draw capital, markets for agricultural produce and infrastructure hence

benefiting the landowners. When the sizes of farms are small and fragmented, however, economies of synergy are not possible and this may result to a tragedy of the spatial anticommons.

Agricultural drylands in Kenya are mostly used for livestock production whereby many communities practice extensive pastoralism system. As such, large tracts of land are required to sustain this system. Besides, the easiest way to expand the system is by way of acquiring more land to support the increased flock. A pastoralist who wants to increase livestock production by acquiring more land from the surrounding small fragmented plots is likely to incur more transaction costs since the small plots would be expensive to purchase, unlike buying one adjoining large parcel. If the pastoralist decides to operate several disjointed small grazing fields, the farmer will likely experience more operational costs. In addition, the pastoralist may find it difficult to get land for sale near his farm.

Efficient livestock production and crop farming operate under economies of scale and synergy, which in turn reduce production costs. These requirements are usually possible when the agricultural land size is large and contiguous. Small and fragmented farm sizes may increase production costs and lower agricultural productivity, leading to a tragedy of the spatial anticommons. This is because a small pastoral land can only accommodate a small number of livestock.

In view of the preceding discussion, the theory of the spatial anticommons explains the likely impact of the phenomenon of dry agricultural land subdivisions into small land sizes in Kenya. This is because subdivision of agricultural land into two or more small units which are eventually owned by different exclusive owners may be too small to support agricultural economies of scale or may be located in rural areas lacking basic infrastructure services to support alternative land uses. When this scenario happens, the small agricultural subplots remain ‘undeveloped’ and do not benefit either the exclusive agricultural landowner or the rural community at large, hence may lead to economic loss in form of underproduction resulting to a tragedy of spatial anticommons.

CONCLUSIONS AND RECOMMENDATIONS

This paper has demonstrated that the theory of the anticommons may explain the phenomenon of subdivision of dry agricultural land in Kenya. Basically, privatization and subdivision of agricultural land into small sizes should be discouraged to avoid tragedy of the spatial anticommons. This is because even though spatial anticommons properties are not necessarily tragic in the short run, they are likely to become tragic in the long run. The national and county governments should thus put in place appropriate and clear policy, legal and institutional frameworks to prescribe allowable minimum economical/optimal agricultural land sizes in various agro climatic zones in Kenya. The minimum agricultural land sizes should be based on a scientific study. Since it is difficult and unnecessary to reverse agricultural land privatization trends, in any case it is assumed to be a cure of the tragedy of the commons and it fosters economic development, individual titles should have restrictions on the minimum allowable land sizes depending on the location and use of the land. Where agricultural land is used for extensive livestock production system, for example, large tracts should be encouraged unless and until the owner wants to change the user. The legal framework for physical planning and registration of land in Kenya such as the Land Registration Act and the Physical Planning Act should thus make it mandatory that allowable minimum agricultural land sizes are adhered to before creation and registration of new titles. Other policy interventions may include large plot zoning, agricultural land zoning and public facilities requirement ordinances, among others.

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