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## Small-scale European forestry, an anticommmons?

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**Abstract:** In the article, I look at a phenomenon present in many small-scale European forests, their underutilisation. This underutilisation is obvious when it comes to timber extraction, but it can be argued that it is also present in relation to certain ecological or social uses of the forest. I do not want to judge this phenomenon in the article, but want to understand the reason this underutilisation occurs. Looking at forest resources worldwide and also in history, we conventionally face a problem of overuse. Taking first the property rights theory, I then refer to the tragedy of the anticommmons to analyse the underutilisation. We observe a spatial anticommmons in our forests. Even if the outcome of the tragedy of the commons and of the tragedy of the anticommmons are opposed, I argue that analysing the solutions to the problems requires the same theoretical background. Both are collective action problems. However, compared to problems observed in forests elsewhere, the conditions for collective action are substantially different in the regarded case. In closing, I briefly compare forests as anticommmons with other debates on the anticommmons going on in the other debates around the commons.

**Keywords:** Anticommmons, European, Forests, Property Rights

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## I. Introduction

The following article looks at the typical problems of small-scale private forestry in most contemporary Western and Central European countries. Identifying and analysing the problems of small-scale private forestry in Europe is far from new within forestry science. In fact, many generations of foresters have contemplated them (Endres 1905; Abetz 1955; Niskanen and Väyrynen 2001). What is new here, is that it is approached from a different angle – from the perspective of property rights and common property theory. This is not only fruitful from the perspective of European small-scale private forestry, but also for the reason that an extensive attempt to understand collective action and collective management of forestry resources in the world is underway (see e.g. the IFRI project).<sup>1</sup> Many studies, however, focus on the developing world, which faces completely different problems from the forests described here. Because of its fundamental difference, the regarded case studied here gives us another perspective, which might help us to better understand collective action in forestry in general.

First, I provide some context information about small-scale private forestry in Europe and Germany. As small-scale forestry is a concept which has many definitions (Wiersum, Elands, and Hoogstra 2005), I will clarify its meaning in this article. Additionally, the scope of the phenomenon must be pointed out. In the history of Europe, and also currently from a world perspective, the main problem related to forests has always been their overuse. Theorists have developed explanations for why this overuse is symptomatic of many forests (Hardin 1968). However, for several decades now, small-scale private forests in Europe can be characterised by a considerable economic underutilisation (Hytinen 2001; Schaffner 2000). The annual cut is well below the sustainable yield, and stocks are therefore growing constantly. One could argue, when following many studies about the motivations of small-scale European forest owners, that economic underutilization is not a problem. Many small-scale forest owners have either absolutely no interest in their forest,<sup>2</sup> or are more interested in the recreational or ecological values of their property (Wiersum, Elands, and Hoogstra 2005; Ziegenspeck, Hårdter, and Schraml 2004; Madsen-LM 2003; Holthausen and Baur 2004; Hoogstra, Schanz, and Wiersum 2004). In the past, many of the important values for small-scale private forest owners – recreational values and ecological values – were provided by the state on behalf of the small owners (Giessen 2003). In the future, however, the state does not want, or will no longer be able, to provide many of these services.

<sup>1</sup> International Forestry Resources and Institutions <http://www.indiana.edu/~ifri/>.

<sup>2</sup> Wiersum et al. (2005) show in their comparative quantitative study that in eight European countries 30 percent of the respondents have no interest at all in their forest, and 40 percent have little interest in their forest. These findings are even more significant if one considers the inevitable sampling bias, through the difficulties of locating owners, and inducing them to respond to a questionnaire.

The article argues that the small-scale private forest owners have difficulties producing those values, not only in the interest of the community as a whole, but also in the interest of the particular small-scale private forest owner.

After exposing this astonishing (for an economist) phenomenon of under-utilisation, I try to understand it with the help of the property rights theory. It is argued that the current cost-benefit structure in the forestry sector should call for a kind of deprivatisation process, away from atomistic, private property rights. However, because private property rights already exist, and there are no set up costs for the regime, the theory would have difficulties explaining such a shift. Therefore, this article refers to the tragedy of the anticommons literature, which helps to understand the current problem of small-scale private forestry. The tragedy of the anticommons is able to elucidate the general difference between current European forestry and its history, and forestry in most other parts of the world. However, the tragedy of the anticommons describes the problem, but does not provide an understanding for its solution. In this respect, the problem of small-scale European forest owners is similar to problems faced by commoners elsewhere. It is a problem of collective action. The last section refers to some similarities, but mainly differences, between the collective action problems in both situations. The arguments made in the article are then placed into the larger perspective of common pool resources. Finally, conclusions are drawn.

## 2. The problem of small scale forests in Europe

What is small-scale private forestry and how relevant is it within Europe? There is no single definition in Europe for small-scale forestry.<sup>3</sup> Therefore, it is necessary to define the meaning of small-scale forestry used in this text. It is not necessary in our case to draw a very strict line, because depending on the particular values we wish to provide (e.g. a Nordic Walking trail, a particular habitat, silviculture strategy, or harvesting method) the problem will occur at a different ownership size. Therefore, one could draw the line at 3, 5 or 10 hectares of ownership and in some cases somewhat higher. At these small sizes the owner does not depend to a great extent on the income received from the forest (at least in a European context). This is often coupled with a reduced, or completely absent, economic interest towards the forest.

One can generally expect that a large percentage of these owners are absentee landlords (urbanised forest owners (Schraml 2003)), who have a relatively small amount of knowledge about forestry. However, those features are extremely variable between different regions and cultures. The average Swiss small-scale forest owner, for example, lives close to his forest (most owners are male), is knowledgeable about his forest and has close ties to it

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<sup>3</sup> In Germany the limit between small-scale and large private forest owner is 200 ha. However, this distinction does not seem to play any role in most debates, where only much smaller property owners are classified as small-scale owners.

Table 1: *Small-scale private forestry in Europe (Source: TBFRA-2000 UN/ECE-FAO; <http://www.unece.org/trade/timber/fra/welcome.htm>).*

	Aver. size priv. woodl. in ha	Number of holdings	% <3 ha	% <5 ha	% <10 ha
Liechtenstein	0.86	584	99.83%	99.83%	99.83%
Poland	1.77	843,803	89.50%	95.80%	99.00%
Belgium	2.47	155,130	88.18%	92.70%	96.06%
Lithuania	2.64	139,000	60.77%	89.34%	96.71%
Slovenia	2.82	290,000	80.30%	88.60%	95.80%
Czech Republic	3.05	137,260	87.02%	95.00%	98.30%
Luxembourg	3.42	13,785	67.49%	85.39%	93.50%
Netherlands	5.75	28,868	77.40%	90.64%	93.65%
Portugal	7.81	409,524	84.80%	86.23%	93.25%
Austria	7.87	227,307	0	25.57%	41.25%
Italy	8.77	815,586	39.50%	59.56%	77.97%
Germany	9.54	349,361			
Estonia	10.82	17,000	23.43%	42.49%	66.96%
Latvia	11.19	117,645	23.80%	45.30%	67.36%
Ireland	13.1	15,264	19.65%	39.31%	65.51%
United Kingdom	13.37	106,000	55.66%	68.11%	81.79%
Denmark	17.92	20,005	34.37%	65.03%	81.53%
Spain	30.78	670,710	60.44%	79.25%	87.65%
Slovakia	31.33	28,659	34.89%	85.91%	87.61%
Norway	52.98	171,079	17.83%	28.06%	40.51%
Sweden	92.64	260,386	8.17%	18.76%	31.32%
Turkey	124.14	145	6.21%	40.00%	52.41%
Greece	934.39	1,265			48.46%
Finland		439,189		33.50%	33.50%
Yugoslavia		3,627	100.00%	100.00%	100.00%

(Wild-Eck, Zimmermann, and Schmithüsen 2006). In other areas it may be entirely different. Examples for the other extreme are many transition countries, where restitution, or even distribution, of forest land has just recently taken place. In those areas, absentee landlords with no knowledge about forestry and no particular interest in their property may dominate. However, the picture also varies greatly there (see e.g. Lawrence and Szabo 2005; Sulek 2006). Despite those differences, one problem seems to occur everywhere in small-scale forestry: it is difficult to use for its various purposes (Niskanen and Väyrynen 2001).

Table 1 shows the average ownership size of private forest owners in different European countries. As a result of the large range in ownership size, the amount of private forest owners and the percentage of owners smaller than 3, 5 and 10 hectares are also provided, when the data was available.<sup>4</sup> The data

<sup>4</sup> The European statistical office, on which this data is drawn, has no figures for German small-scale private owners below 10 ha. There exists, however, large numbers of small-scale forest owners. This indicates how difficult it can be, in simple practical terms and not considering different opinions, to come to a joint decision with these owners.

clearly show that the issue of small-scale forestry is of significant importance for Europe. Having said that, the problems described here are of little importance for most Scandinavian countries (Denmark is an exception) since the average size of private ownership is higher than in other parts of Europe, and the percentage of small owners is not particularly high. In spite of this, the arguments brought forward here are relevant for large areas of western, central and eastern European countries, obviously to different degrees. They seem to be particularly relevant for countries in transition.<sup>5</sup> Although this article mainly tries to make a theoretical argument, I refer to empirical material several times for illustrating purposes. The case I use is from Germany and more specifically the Allgäu.<sup>6</sup> Even if my goal is to make a general argument relevant for large parts of Europe, I nevertheless believe that thick description is needed to understand (“verstehen”) the problem. Therefore, the reference to a case study is justified.<sup>7</sup>

What characterises important parts of small-scale private forestry in Europe? Many of these forests are not actively used, either by the owners or others. By its mere existence, a forest produces certain values (good or bad: CO<sub>2</sub> storage, ecological habitat, bark beetle pests). Only certain values, however, are produced in an unused forest. Other values important from a societies’ and owners’ point of view are not provided. We can think of certain ecological values. One cannot have a certain ecological habitat if, for example, in between many unused plots, some scattered plots belong to owners who make intensive economic or other use of their plot. We can think of social values. How can one, for example, find an agreement on a new Nordic Walking trail, if hundreds of small owners must agree with it? A small size does not allow for certain production technology, which excludes certain economic uses. Whether use or non-use is seen as a problem, depends on the perspective of the person judging. Saw mills and the government, for example, see the non-use as a problem; nature conservationists might have a different view on this. This argument makes it once again apparent that “the” efficient institutional structure does not exist, but rather that each one has its own distributive consequences (Knight 1992). According to Bromley, we must ask the question about the efficiency for whom (Bromley 1989).<sup>8</sup> These distributive consequences should not be forgotten – they are, however, not in the focus of the article. Neither is the question of

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<sup>5</sup> See, for instance, the various chapters in Niskanen and Värynen (2001) about central and eastern Europe, see also Sulek (2006).

<sup>6</sup> I mainly refer to Allgäu, Germany, because it is the focus of an ongoing research project ([www.zufo.de](http://www.zufo.de)). The project concentrates on current institutional change in the forestry sector. We follow an ethnographic approach, delivering “thick description.” This approach is greatly needed to understand institutional change in the field of the environment (Adger et al. 2003).

<sup>7</sup> We need to understand, for example, the cognitive models of the actors involved (Paavola and Adger 2005; Schlüter 2007).

<sup>8</sup> See Hotimsky et al. (2006) or Schlüter (2001) for a comparative view of the various theories of institutional change. There is a strong discussion between efficiency and power/distribution oriented approaches.

whether the use or non-use of the forest is positive or negative. This inevitably normative question of sustainability can only be answered on the level of society (Bromley 2001),<sup>9</sup> which then has to set the “institutions right” (in the sense that the society plays the game it wants to play, not in the sense of a given efficiency). The aim of the article is to understand, with the help of theory, the consequences of the current institutional setting in small-scale private forests. To achieve this, I must first justify the examination of the non-use phenomenon by explaining why non-use could be a problem. This explanation is given by describing the problem from the three perspectives: the economic, the ecologic and the social use of the forest.

### 2.1. Economic values

The main problem is certainly the economic use of the forest – the timber use. Large volumes of standing timber are present in the small-scale private forests, but there are difficulties with its mobilisation. The timber is present, but no one can remove it from the forest for several reasons. First of all, the proportion of family income derived from forestry is relatively low, which often leads to a low interest of the forest owner. Furthermore, many owners no longer reside close to their forests. Nor do they have the necessary forestry knowledge their forefathers had, or the time to do the harvesting themselves. Additionally, the technology for harvesting timber has changed. The use of harvesters can often reduce harvesting costs substantially. If one is to remain competitive, there is no alternative than to realise all available cost savings. However, these technologies have immense economies of scale, which cannot be realised in small-scale private holdings without a combined harvesting effort from multiple owners.

Fragmented ownership also leads to high transaction costs through having to assign individual timber values as a result of the more complicated timber transport logistics. Market access has also become a substantial problem. The sawmill industry is currently undergoing a restructuring process. Fewer large sawmills are now dominating a greater share of the market (Mantau and Weimar 2003). Those sawmills do not deal with small-scale private forest owners. They demand that suppliers assure the delivery of enormous amounts of timber directly to their gates on a just-in-time and regular basis. Put shortly, competition in the timber market is strong. Forest owners are only able to sell timber successfully, and make any profit under the current relative prices (high labour costs), if this is done in an “efficient” way. Similar to harvesting, economies of scale are also present in silviculture. Such small and tightly arranged parcels are so interconnected that it is unreasonable to have heterogeneous silviculture strategies. For example, when one forest-owner clear cuts, it may have severe

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<sup>9</sup> To answer this question, the society would need to use scientific advice, as warranted belief (Bromley 2006), from various disciplinary fields.

impacts on the stability of the adjacent stands. Due to the problems mentioned above, many owners do not actively use their forests for timber production.

This creates a problem from various perspectives. The saw mills, at least in Germany, are short of timber. If the regional market is unable to provide them with timber, they must search for sources further away, which is not particularly sustainable. From a societies' perspective, it seems wise to use the regenerative resource of timber at a sustainable level and possibly replace other materials, might it be fossil fuels or energy intensive concrete. The demand for energy wood has sharply increased, a trend which currently shows no signs of diminishing. This excess demand led to rising prices on the timber markets. Timber use can also be seen as useful from a regional development perspective (Wiersum, Elands, and Hoogstra 2005; Kniivilä, Ovaskainen, and Saastamoinen 2002), creating much needed local employment. Last, but certainly not least, the inability to use the timber is a problem for those forest owners, who would like to benefit from the economic value of their forest (Kvarda 2004). Although many studies show that economic goals are not in the foreground for many owners, most of the owners nevertheless wish to receive economic benefits from their forests (Kvarda 2004).

## **2.2. Ecological values**

As indicated above, various studies have shown that many small-scale private forest owners focus to a greater extent on the non-economic values of their forests. Therefore, not only from the perspective of the society, but also from that of the owner, the non-economic aspects of sustainability are probably equal, or more important. Whether or not small-scale forestry leads to an underutilisation from an ecological perspective, is not as easily answered by looking at its economic use. One could argue that a property structure, which prohibits any commercial use of the forest, could provide the best nature protection. Scholars have different opinions on this, but since I am not an ecologist, I will not judge this issue. However, what must be made clear is that the current property structure does not preclude any use of the forest. Various forms of use are still possible (from a mountain bike terrain, to fuel wood production, to ecological habitat production), which leads to very heterogeneous uses over a relatively small area. This may ultimately destroy the values and benefits for all users. It may be impossible to create an ecologically valuable habitat when a neighbouring plot is used for intensive fuel wood production. The same is true if the game population level in an area is kept high due to hunting interest, which then prevents any silvicultural strategy that relies on natural regeneration. If one neighbour does not attempt to control the bark beetle population increase, this might reduce the value of the surrounding forest properties, regardless of whether they are used for timber production or "ecology production". Therefore, the small-scale ownership in the forest does not prohibit any uses, but might prevent the production of particular ecological values. The more one needs

economies of scale for a particular ecological value, the more it therefore becomes a public good, and the more the production of this value in small-scale private forests becomes difficult.

### 2.3. Social values

A similar argument can be made, when examining recreational values. If the Saturday chain saw activities exemplify the main recreational value of a forest plot (an important value produced in our forests, but possibly incomprehensible from a developing country's perspective), and the recreational needs regarding the forest are homogeneous (everyone is partial to chain saws), then small-scale private forests are not a problem. However, if the requested values are heterogeneous and imply economies of scale, then their production may be impossible in the form of scattered ownership. The siting of a mountain bike or walking trail might be impossible, if it is necessary to negotiate with thousands of owners (whose addresses at the land registry may not even be available).

The main reason for this situation could be the current ownership structure. In the following section, the property rights/common property theory is discussed in order to examine small-scale forestry from this theoretical perspective.

## 3. Small-scale forestry, property rights and common property theory

The situation is different than what has been examined by many property rights or common property theorists. According to Demsetz's ([1967]1988) seminal paper, the initial situation begins with open access or less restrictive and less defined property rights (e.g. Eggertsson 1998). Next, a change takes place, such as scarcities change (due to overuse, for example) or new exclusion technologies emerge. This alters the cost-benefit relationship of the ownership regime. The various actors involved then evaluate the situation and, when many believe it serves their interests, they may overcome the collective action problem they face and contemplate a new property regime, if they have the autonomy to do so. This is a simplified version of the theory that Eggertsson (1990; 1998) calls the "naive" property rights theory. It regards the necessary political/collective action process as a black box. However, this version is adequate for our present purposes.

Depending on the resources' characteristics, this theory predicts the creation of either a common or a private property regime (see below). Particularly the "naive" property rights theory assumes that the more we move into the direction of private property, the less waste is produced from overuse and therefore the higher the benefits. As defining property rights is costly, which property regime is adequate for the particular resource depends on those costs (Barzel 1989).

This understanding apparently also often underlies common property theory. Bromley (1992a), for example, explains the emergence of many common property regimes in developing countries with the fact that the returns coming from the resource are not high enough to finance the definition of exclusive private property rights.

When looking at the theoretical contributions, but also when examining the empirical cases investigated, the direction from less to more exclusive property rights seems to be unidirectional (Bromley 1992b; Berge and Stenseth 1998). This might be the most comprehensive and intuitive direction: scarcity increases and institutional/exclusion technology becomes more sophisticated and expensive. However, no theoretical reason makes this a unidirectional process. We can also observe empirically that different attributes of property rights are occasionally left again in the public domain. It becomes worthwhile to reverse the property rights because of a change in the cost-benefit situation (Barzel 1989), which in this case is nevertheless rarely considered. In the next section, the current situation is reconsidered under the perspective of the property rights theory in order to provide a theoretical explanation for why this reverse in property rights structure could be useful.

#### 4. The problem revisited under a property rights perspective

Currently, every square meter of forest land is, at least in Germany, *de jure* well delineated and belongs to an owner, be it a private forest owner, a municipality or the state. In the field of private small-scale forestry, individuals primarily own parcels, which are sometimes only a few square meters (see Figure 1). In German, these are called “towel pieces.”<sup>10</sup> At the land registry office, there are maps with well-defined parcel boundaries and records of each particular parcel’s owner. However, it is often apparent that the owner indicated on the map has long since passed away. The current rightful owner decided against changing the land title records because of the high costs involved.

The forest land is strictly private property. The products generated, on the other hand, are a combination of the production of public and private goods. If property rights are understood as a bundle of attributes, then it is apparent that, from the view of the society, it is efficient having the various goods generated by a forest placed differently on the continuum from open access to private property.<sup>11</sup> For example, taking a walk in the forest or picking mushrooms is a traditional open access right in Germany. In all cases of small-scale forestry, the right to hunt is taken away from the property owner and is required by law to be organised with the assistance of a common property regime, the so-called

<sup>10</sup> The actual size depends very much on the inheritance laws of that particular region. Everywhere the property was divided in between the siblings you find small-scale private forests.

<sup>11</sup> Turner et al. (2003) and Bromley (1989), for example, explain this. To my understanding this comprehension is at the heart of the public goods debate and has long dominated the debate regarding the useful form of governance in the forestry sector (Memmler and Ruppert 2006).

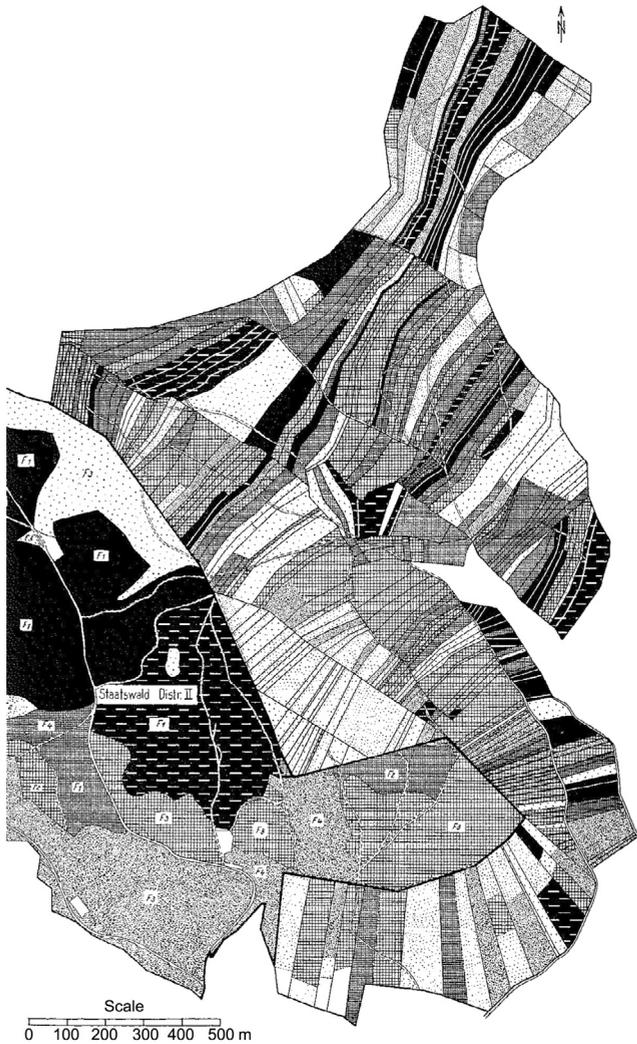


Figure 1: A typical forest map with state forest (big plots) and small private plots in the Black Forest Source: (Abetz 1955).

hunting co-operatives.<sup>12</sup> Some private property rights related to silviculture and harvesting are restricted. For example, in the state of Baden-Württemberg, the size of allowable clear-cuts is restricted to one hectare – larger clear-cuts require

<sup>12</sup> The right to hunt in Germany is tied to private hunting districts and cooperative hunting districts (§ 4 BJagdG). Private hunting districts must comprise of at least 75 contiguous hectares owned by a single individual (§ 7 BJagdG). Cooperative hunting districts must comprise of at least 150 contiguous hectares (§ 8 BJagdG). The vast majority of hunting districts are cooperative hunting districts, which then lease the hunting rights to a hunting cooperative (§ 10 BJagdG).

the permission of the forest authority (§ 15 LWaldG BaWue). Furthermore, the land owner requires permission to convert her forest land for any other use than forestry. Most of the property rights related to silviculture and harvesting are nevertheless with the private landowner.

According to the property rights and common property theory, one could argue that we have a coherent property system, coming close to their recommendations: private rights for private goods. If a strong common or public interest is involved, private rights are restricted and are either organised as a common or state property regime. How can we then understand the underutilisation of the various values produced by the forest from a property rights perspective? I will subsequently explain the observed phenomenon with the help of the idea of anticommons.

## 5. Small-scale private forestry and anticommons

The problem of underutilisation of resources was first explained by Michelman (1982), and more recently by Heller (1998), as the tragedy of the anticommons. It was first presented as a parallel process to Hardin's (1968) conventional tragedy of the commons (Buchanan and Yoon 2000), which has since been a lengthy source of dispute amongst common property scholars (Ostrom 1990). Heller was the first to apply the tragedy of the anticommons to property use under transition. Another application of the approach can be found in innovation theory.

The tragedy of the anticommons emerges from an excessively fragmented bundle of property rights. However, this fragmentation only becomes a problem if each of the core rights can function as a right of exclusion. Therefore, the resource cannot be used, unless every right holder agrees to the use. If those rights of exclusion are dispersed between too many owners, then use of the resource could become an unsolvable coordination problem. The following figure from Heller explains the idea of the tragedy of the anticommons.

We imagine resources 1, 2 and 3, which could each be a forest plot, along with resource owners A, B, and C. What Heller calls private property, is when the entire bundle of property rights to a particular resource is in the possession of one owner.<sup>13</sup> The owner can therefore determine what will happen with the resource and thus use it to optimise her own interests. By contrast, in the anticommons situation, the bundle of rights is divided between many different actors. This leads to a process, where the resource is only able to be used if all of the various right holders agree to a use. Reaching an agreement could become so costly that no one can use the resource.

<sup>13</sup> It is somewhat misleading that Heller calls a situation private property, when the property rights lie entirely in the hands of one individual. First, as Bromley (1989) points out, this situation rarely exists. Secondly, property rights theory has clearly shown that a separation and reallocation of the bundle of rights is in many cases desired and raises efficiency. It would, however, remain private property.

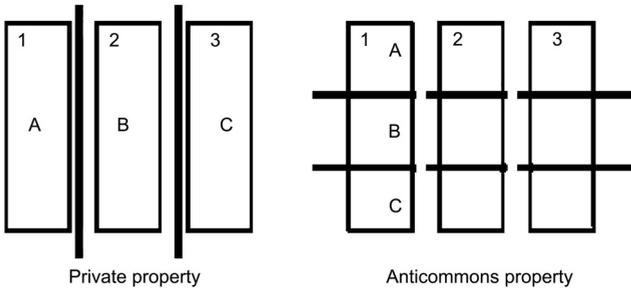


Figure 2: The distinction between private and anticommons property (Heller 1998).

The notion of the tragedy of the anticommons could be easily misunderstood when applying it to forestry.<sup>14</sup> Forestry production is a mixture of the production of public and private goods. There is not necessarily a link between a type of resource and a specific regime that should govern it (Ostrom 2000). However, due to the production characteristics of forestry, it is apparent that different attributes are allocated to different groups or, more specifically, held in a different property rights regime, without harming the use of the forest, but rather securing its sustainable use (Turner et al. 2003). For example: Restricting the private use of forests by prohibiting the use of synthetic oil for chain saws in order to protect the ground water, or the prohibition to cut down trees in which birds are nesting, does not create a problem of anticommons per se, because within this rule the owner can still use her forest. It simply protects the rights of other interested parties. If she were required to ask ten different actors before being allowed to cut down a tree, then this would create a problem of a legal anticommons.<sup>15</sup>

Heller distinguishes between legal anticommons and spatial anticommons. Legal anticommons exist, when the bundle of rights from one object is split and held by too many actors. This is what I have described in the paragraph above. It was subsequently argued that this does not prevent the use of the forest. What creates a problem of underutilisation in small-scale private forestry are spatial anticommons. However, the result is the same in both cases: due to a fragmentation of rights, a use of the resource becomes very costly. Spatial anticommons exist, if each “owner receives a core bundles of rights, but in too small a space for the most efficient use” (Heller 1998). In small-scale

<sup>14</sup> Buchanan and Yoon (2000) for example, use the tragedy of the anticommons to argue that, in their opinion, environmental legislation gives too many (environmental) actors the possibility to exclude others from use (e.g. block development), therefore blocking the actual use of the resource. This is certainly not the point being made here.

<sup>15</sup> This was the problem in the land restitution process I analysed in the Czech Republic. There, 13 agencies had to be consulted before the claim of a restituent could be dealt with (Schlüter 2001). This is a typical example from a transition economy, which Heller (1998) had in mind when he first brought forward the idea of the anticommons.

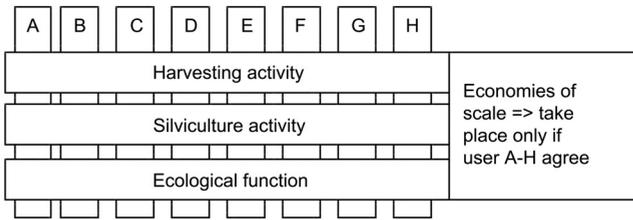


Figure 3: *Spatial anticommons in small-scale private forestry.*

forestry, every owner of a parcel holds important property rights, which should make a use possible. There are legal restrictions on these property rights. However, these restrictions still allow for “appropriate” use. The owner holds, for example, the important property rights for harvesting trees. She also holds the important property rights for determining the silvicultural or ecological strategy in her forest. The problem is that she holds the right for such a small portion of land that she can only exercise her right (under the current technological conditions) if she would join together and agree with many other users.<sup>16</sup>

Buchanan and Yoon (2000) explain the problem with the help of a car park – which is a typical example of the tragedy of the commons when no restriction to entry exists. This particular “anticommons” car park is characterised by various actors holding the right to exclude others from entry. One can only access the car park if permission is granted by each rights holder. This could involve such a complicated bargaining process that the car park is not actually used. In small-scale private forestry an agreement would have to be reached between so many right holders that the costs of finding an agreement exceed the benefits.<sup>17</sup> The costs of finding an agreement are partly determined by the heterogeneity of the property rights holders, but, the problem remains even if we assume homogeneous actors as indicated by the externalities argument below. The reason the dispersed property rights create a problem is due to economies of scale in the production of the various forest values. Nevertheless,

<sup>16</sup> Heller (1998) illustrates this through the “Fractionation of Native American Allotted Land,” where each native received such a small fraction of property, that using it individually was impossible and finding an agreement for joint use so complicated that the property could not be used at all. Development was blocked because of the fragmented property.

<sup>17</sup> Heller (1998) argues that the reasons for the tragedy of the anticommons are ultimately transaction costs. In a world free of transaction costs, anticommons rights would be rearranged into usable bundles. I argue that the reasons for remaining anticommons not only have to do with property rights, but also different preferences. If I am the holder of a small parcel in the centre of a particular area, and I know that through my property rights I could prohibit others from using their forest in a way I find objectionable, e.g. the use of heavy machinery, then I may be willing to keep my property rights, even if a transfer would be inexpensive.

the reason those economies of scale cannot be realised can only be explained with the help of a property rights perspective.

If the property rights holder's gains are high when changing from an anticommons distribution of property rights to a distribution of rights that allows for sustainable use, then we could speculate that such a process takes place rather quickly (Heller 1998). In the field of forestry and its current low levels of return (Bormann, Küppers, and Thoroë 2005) however, it can be assumed that the costs of rearranging the property rights exceed the benefits. The cost of non-cooperation for the individual, which leads to nonutilisation of the resource, is relatively low.

Schulz et al. (2002) frame the tragedy of the anticommons, parallel to the tragedy of the commons, as a problem of externalities. When the holder of an exclusion right determines, whether or not the use by a third party is allowed, she often does not consider that her decision has an impact on the benefit stream of other right holders. Plot holder A does not consider the benefits arising to the plot owners B-H when making her decision, which could be for example, whether to allow the use of a harvester or not.<sup>18</sup> After further examining this argument, one could respond to the tragedy of the anticommons in a manner similar to that regarding Hardin's tragedy of the commons (Ostrom 1990): If users are not prohibited to communicate, they will potentially agree on rules to solve the tragedy of the anticommons. With this approach, the problem evolves back into a collective action problem, similar to overcoming the tragedy of the commons.

## 6. Comparison of anticommons in small-scale European forestry with forestry elsewhere and the commons debate in general

Parisi, Schulz and Depoorter (2003) argue that the tragedy of the anticommons is ultimately a problem of asymmetric transaction costs. An individual, who controls all the relevant property rights of a resource can easily make the decision to split the property rights in portions she perceives as being suitable and efficient. This is different when the property rights to one object are held by various people. Changing the property rights structure might then involve costly negotiations, which may lead to being trapped in a situation of exceedingly fragmented property rights. According to Parisi et al., fragmenting

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<sup>18</sup> Imagine, for example, a forest owner, who detests the sight of a recently harvested forest with a modern harvester (Suda 2000), because it looks devastated. Assuming this owner is an individual utility maximizer, she will not consider the losses she induces on other users by blocking the use of the harvester. However, she will consider the benefits she receives when, as a result of her decision, none of her neighbours are able to use this technology.

property rights is “cheap”, de-fragmenting is costly.<sup>19</sup> In the section above, the substantial difference between our current problem in European forests and elsewhere was described. The substantial similarity between the two problems now emerges. Be it overuse or underutilisation of the resource, both phenomena are ultimately a problem of collective action and should therefore be analysed with the same theories. Theories of collective action have long since been applied to the use of forests in various parts of the world (e.g. Poteete and Ostrom 2004; Baland and Platteau 2000), including European forests (Hårdter 2003; Schraml 2003; Ziegenspeck, Hårdter and Schraml 2004; Schaffner 2000; Bittner 2003; Kvarda 2004; Schlüter 2006). This article cannot apply the theory of collective action to the current situation appropriately, a task that would require an additional paper. Although using the same theoretical focus is appropriate, it also seems interesting and necessary to highlight some of the similarities and differences of collective action in the two cases.

One important difference is the asymmetric importance of the forest in relation to the livelihoods of the actors involved. The former pay-offs from forest products, which are still present in many other parts of the world, used to have an important impact on the income of the forest user. In current European small-scale private forestry, the proportion of income derived from forestry is negligible in nearly every case. Following general economic wisdom, this would make collective action for solving the tragedy of the anticommons rather unlikely. However, many studies show that the primary motivation of small-scale private forest owners is not the monetary benefits, but other benefits. These other benefits have such an important value for the owner that she is willing to commit herself to her forest. This issue is linked to another relevant aspect.

Many studies examining collective action in relation to common pool resources focus strongly on the importance of hetero- and homogeneity, mainly in relation to the ethnic composition of forest users (see IFRI, Poteete, and Ostrom 2004; McCarthy et al. 2004). Due to the stable property structure in the forestry sector, where land transactions nearly only take place because of inheritance or due to historical reasons, there is only a minimal amount of ethnic diversity within European forest holders.<sup>20</sup> Nevertheless, the rising heterogeneity of forest owners is actually one of the crucial problems in mobilising timber in small-scale private forestry (Schraml 2005). Extreme ecologists, traditional farm owners, urban forest owners who might be unfamiliar with their land, lawyers, house wives, professors, or any other personality, need

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<sup>19</sup> This argumentation is only true, if the type of right an owner wants to fragment already exists (e.g. a particular leasing agreement). In that case, the main difference in costs between fragmentation and de-fragmentation are the negotiation/collective action costs. If the new right, which allows for fragmentation, needs to be created, the emerging costs for this creation can be substantive and also involve many collective action costs (think, for example, about the establishment of the right to the genetic code of a tree).

<sup>20</sup> This conclusion might not be true for all of the central and eastern European forests.

to make a joint decision to be able to use their forest(s). What they all have in common, is that they do not have to follow any sort of economic imperative in using their forest, but instead can and often want to follow their diverse individual strategies in forest use.<sup>21</sup> The problem of heterogeneity is certainly an important one, if we wish to understand collective action for overcoming defragmented property rights. However, no simple indicator for it, like “ethnic heterogeneity,” exists; instead a more complex picture evolves.

To close the argument brought forward in the article for the forestry sector, we should briefly examine other areas researching common pool resources to see the relevance of the anticommons and what similarities and differences there are. The debate about the tragedy of the anticommons has somehow found its way into the commons debate.<sup>22</sup> However, its main application is in the area of knowledge commons and not in relation to natural resources (e.g. Hunter 2003). This is understandable because the tragedy of the anticommons was quickly used to demonstrate the inefficiencies, which arise in relation to innovation when the property rights to crucial knowledge are too fragmented. This became a significant problem in the past decades with the development of patent laws, which placed more and more innovations into the private domain. What is the general difference between an anticommons in the area of knowledge, as described by Hess and Ostrom (2006) for example, and the anticommons described here?

The main difference is certainly that a tragedy of anticommons in the field of knowledge is a legal and not a spatial anticommons. This indicates that a knowledge anticommons is more of a man-made problem, or could be more easily overcome by the political system than a spatial anticommons problem. The amount of wealth loss for our society due to a legal anticommons is a question of the institutional structure which surrounds us and which we can alter. Laws determine how quickly private knowledge becomes public domain (Parisi and Depoorter 2004). In relation to spatial anticommons, apart from an expropriation, a technological shift would be necessary to solve the anticommons. This shift can only be organised by political will in a limited way. Additionally, a knowledge anticommons, due to the nature of knowledge, often has the characteristic of being automatically solved, as private property rights to knowledge are more difficult to protect over time than the rights to many

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<sup>21</sup> To illustrate this heterogeneity is a quote from a manager of a forest association: “The farm successors are usually just normal people, which means that they’re the Aldi [supermarket] cashier, the tax expert, the Bund nature conservationist, the biology teacher with the Passat, roof railing and shell-rimmed glasses... Why did I start talking about this? It means that today we have to offer different services aimed at each particular target group and adjust our interaction with and behavior towards them accordingly. That is to say, I have a meeting in the morning in Munich with a lawyer who owns a forest, after that I have an appointment with the Friends of the Earth nature conservancy chairman in his forest – he’s making his forest into a socio-hydraulic-toad-pool-landscape, then there’s the traditional farmer who needs 50,000 Euros for his tractor.”

<sup>22</sup> The Digital Library of the Commons delivers 9 hits. Hess and Ostrom (2006) and Pålsson (2000) develop their argument about anticommons further.

physical objects. To “take away an idea”, or to alter it enough that it cannot be recognised as a copy, is generally easier than taking away a forest plot or even a single tree, at least in most parts of Central and Western-Europe.

## 7. Conclusion

The main, current problems of small-scale private forestry in large parts of Europe have been briefly presented. The present problem of small-scale private forestry is not one of overuse, which is the problem of the majority of the world's forests, but of underutilisation. It was argued that this problem needs to be theoretically framed, from the opposite angle than the problem of overuse. Instead of having property rights (be it private, owned by a group or by the state) without a sufficiently clear definition, the problem in small-scale private forests is that the property rights are too fragmented. First, the property rights theory/common property theory, and second the tragedy of the anticommons, were used to make the argument. Property rights that are too fragmented give forest exclusion rights to too many different actors. This makes it prohibitively costly for certain individuals or groups to use the forest as a result of not being able to realise the necessary economies of scale in the different areas of forest use. Small-scale private forests are characterised by a spatial anticommons, and a process that defragments property rights would help to increase the different values produced. The various imaginable property rights structures cannot be discussed here. However, some tentative closing remarks will be made. Historically it was thought that the state should play a large role in this restructuring process, buying many of the plots of small-scale private owners (Volz 1990). Under the current political climate and the budgetary conditions of most European states, we could hardly imagine that this solution could be still seen as an option. Instead, the opposite is the case, and a couple of actors are throwing the suggestion of privatising various state forests into the political arena.<sup>23</sup> An economist's suggestion would be a restructuring process, in which all of the necessary property rights are handed over to an entrepreneurial forest owner, but this is relatively unlikely. Finding this “entrepreneur”, who is willing to undertake the process of restructuring property rights, seems improbable. The main arguments are: First, the return on investment in European forestry is so low in comparison to many other sectors that hardly anyone is willing to go into that sector.<sup>24</sup> Second, this private entrepreneur would also have to overcome

<sup>23</sup> For a theoretical argumentation in relation to forests, see Giesen (2003). Schleswig Holstein, Germany's most Northern Land [Province], is currently considering privatising its entire state forest. In Freiburg, the “capital of the Black Forest”, a discussion on privatising municipal forest has been launched.

<sup>24</sup> This can be seen when observing the strategy of saw or paper mills. According to Williamson (1975), one would imagine that they integrate upstream and buy forest land. However, this strategy is no longer followed (see, e.g. the strategic turn of Stora Enso, one of the biggest paper mills in the world, because capital requirements are too high).

the collective action problem described above. The entrepreneurial activity therefore comes with a considerable risk of failure. Third, many landowners fear that when operating with purely private businesses, which could possibly be linked to the saw mill industry, forest management will no longer follow the imperative of sustainability but of capital interests. That this fear exists, at least in the German case, is shown quite clearly in our ongoing research project. It thus seems rather unlikely that a simple private property rights structure could provide a solution to the problem of the anticommmons. The kind of property regime that would provide a solution requires discussion elsewhere. Eventually, a kind of common property regime, which is built on the currently existing forest associations, could provide an answer (Schraml 2005).

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