Understanding Forest Owners in a Mediterranean Context
Constructing theory through descriptive and interpretational analysis

*A study case in Catalonia*

Thesis submitted in partial fulfilment of the requirements of the degree Doctor rer. nat. of the Faculty of Forest and Environmental Sciences, Albert-Ludwigs-Universität Freiburg im Breisgau, Germany

By

GLÒRIA DOMÍNGUEZ TORRES

Freiburg im Breisgau, Germany
April 2008
Dean Prof. Dr. Heinz Rennenberg  
Supervisor Prof. Dr. Margaret A. Shannon  
Reviewer: Prof. Dr. Gerhard Oesten, Prof. Dr. Manuel Marey Pérez  
Date of thesis’ defence: 1.7.2008
To my family
“If men define situations as real, they are real in their consequences.”

(Thomas and Thomas 1928)
FOREWORDS

Acknowledgements

First and foremost, I would like to thank my supervisors, Dr. Margaret Shannon and Dr. Manuel Marey, for their tireless enthusiasm, invaluable support, and for their contribution to this work.

Many other people have also contributed either directly or indirectly to this study; in particular, I would like to thank Dr. Gerhard Oesten and Dr. Ulrich Schraml for their invaluable support during the research phase of the work and for their helpful comments on the first drafts. I would also like to thank Eduard Plana and Ester Blanco for reading and offering comments on a very preliminary version of the manuscript.

I would also like to thank my colleagues at the Institut für Forstökonomie who provided valuable and extensive comments on the work and challenging discussions in the seminar. I would like to extend special thanks to Dr. Frank Ebinger who reoriented my work with his sharp comments, Dr. Andrea Finger who first suggested the approach, and also to Angelika Weidner for all her support during my stays at the Albert-Ludwigs-Universität.

I am deeply indebted to my interviewees for sharing with me their thoughts, time and experiences. I wish also to extend special thanks to a number of people that have facilitated contact with the forest owners: Ester Blanco, Míriam Piqué, Teresa Rodríguez, Mar Mateo, David Meya, Imma Clop, Ester Moreno, Daniel Oliach, Inès Sánchez, Josep Àngel Alert, Ester Borràs, Lourdes Alarcón, Anna Dalmau, Roger Santmartí, Marga Torres, Daniel Oliach, Joan Rovira, Josep Maria de Ribot, Eva Viladrich, Pere Frigola and Joan Garolera.

I am very grateful to Carles Santana for his assistance in the preparation of the manuscript, for listening to me and looking at many drawings for hours while developing the theory and, of course, for being so critical and challenging during our discussions.

I am also grateful to my colleagues at the Centre Tecnologic Forestal de Catalunya (CTFC), especially the people of the Forest Policy and Rural Development group and Anna Bodet for their support, but also for the extraordinary workload they assumed while I was writing this manuscript. I would also like to thank Dr. José Antonio Bonet and Francisco Rovira, director and manager of the CTFC, for their encouragement and for permission to take leave in order to write this dissertation, Laia Mateu, Laia Ximenis and Marga Torres for helping with the transcriptions, and Toni Llongarriu for assistance with the cartography.

In addition, I would like especially to thank Mark Boyer for helping me in the English editing, Chris Boswell for being the English voice of the interviewees, and Sven Adler for translating the summary into German. Thanks also to Dr Tove Boon, Dr. Verónica Rodríguez and Mag. Eva Kvarda for sharing with me reports, papers and impressions and also Lluc Julià de Na Vermella for helping with the design of the front cover.

I must also thank to Jordi Tena at the Autonomous University of Barcelona for the long conceptual and methodological discussions about qualitative approaches and Grounded Theory, for providing input on the moral norm topic, and also for his help with the interviews and literature.

I would also like to mention my gratitude to Dr. Montserrat Soliva, the person who awoke my interest in research and directed my first research study such a long time ago.

Finally, I would also like to express thanks to all the friends and relatives – you know who you are – who have supported and encouraged me throughout the entire process.
Resümee

Einführung


Es sind viele ökonometrische Studien bekannt, die speziell darauf ausgerichtet sind eine Maximierung des Gewinns und der Nutzung zu erreichen. Diese Studien wurden vornehmlich zur Beschreibung von Methoden und Verhaltensweisen der Forsteigentümer im Bezug auf Einschlag und Pflanzung genutzt. (Alig, Lee et al. 1990; Amacher, Conway et al. 2003). In weiteren wichtigen Forschungsrichtungen wurden die Kostruktur von Typologien der Forsteigentümer eingeführt (e.g. Karpinnen 1998; Hogl, Pregernig et al. 2003; Boon, Meilby et al. 2004), wie zum Beispiel die Wertanalyse, Ziele und Verhaltensweisen (e.g. Bliss and Martin 1989), sowie die Einstellung gegenüber dem Forstmanagement oder der Einführung von verschiedenen Fortspolitischen Instrumenten berücksichtigt (e.g. Bliss and Martin 1990; Church and Ravenscroft 2008; Janota and Broussard 2008).

Die Forsteigentümer sind in verschiedenen akademischen Studien unterschiedlich bezeichnet worden (z.B. non-industrial forest owner, small-scale forest owner, family forestry, etc.). In dieser Doktorarbeit hat man den Namen forest owner dazu benutzt, all jene Personen zu definieren, welche Eigentumsrechte über Grundstücke besitzen, die mit Bäumen oder Sträuchern bepflanzt sind. Diejenigen Personen, welche selbst keine legalen Rechte besitzen, jedoch Entscheidungen über den Wald mit Genehmigung des Eigentümers treffen, zum Beispiel Familienmitglieder des Eigentümers, wurden ebenfalls als solche berücksichtigt.

Jedoch schließt diese Definition alle Eigentümer von staatlichen oder komunalen Forstflächen aus. Die Bezeichnung forest management wurde in dieser Forschungsarbeit als Entscheidungsfindung in Bezug auf das Eigentum gewertet (selbst dann wenn diese Entscheidungen dazu führen keine forstliche Aktivitäten auszuführen).


Die Gewinnung der Forsteigentümer für ein geeignetes Forstmanagement ist eine Herausforderung für die politischen Entscheidungs träger (policymakers). Die forstpolitischen Instrumente müssen, über eine bessere Anpassung an die Bedürfnisse der Eigentümer, ihre Effektivität verbessern. Eine der wichtigsten Voraussetzungen dafür ist die Verbesserung der Kenntnisse darüber, wie die Eigentümer Entscheidungen in Bezug auf ihre Waldgrundstücke treffen.
Das Hauptziel ist die Beschreibung, Analyse und Interpretation in wie weit katalanische Forsteigentümer sich in die forstliche Bewirtschaftung ihrer Grundstücke einschalten.


**Forschungsgebiet**

Die Forsteigentümer, die in dieser Untersuchung studiert wurden, waren aus Katalonien, Region gelegen im Mittelmeerraum von Spanien südlich der Pyrenäen. Etwa 61% der Fläche Kataloniens (Katalonien hat eine Gesamtfläche von 2 Mil. ha davon 1,21 Mil. Forstfläche) ist mit Bäumen oder Sträuchern bedeckt, davon sind 80% in Privateigentum.

Es gibt keine offiziellen Daten über die genaue Anzahl der Forsteigentümer aber in jüngsten Veröffentlichungen geht man, in Abhängigkeit der jeweiligen Quellen und der Definition der ausgewählten Forstfläche, von 50.000 bis 174.000 aus. Die klimatischen Verhältnisse in Katalonien sind typisch für den Großteil Spaniens. Eine Ausnahme bilden die Berggebiete vor allem die Pyrenäen. Die vorrangig anzutreffenden Waldarten sind *Quercus ilex*, *Pinus sylvestris*, *Pinus halepensis*, *Pinus nigra*, *Quercus humilis*, und *Pinus uncinata*.


Vom ökonomischen Standpunkt aus bedeuten die Wälder Kataloniens nur einen geringen Teil der Wirtschaft da sie nur 1,3% der 3,2 Mrd. der Gesamtproduktion des Agrarsektors ausmachen. (darin eingeschlossen Holz- und Feuerholzproduktion, Kork, Jagd und Fischerei, Pilze, Waldfrüchte und andere Forstprodukte) (Vayreda 2004).

Die Waldbrände im Mittelmeerraum haben sich in den letzten Jahrzehnten als eine der bedeutendsten Ursachen für die Zerstörung des Waldes herauskristallisiert. Im Durchschnitt verbrennen pro Jahr 500.000 ha (Vélez 2002; Tábara, Saurí et al. 2003). In Katalonien, wo im letzten Jahrzehnt 1.288 km² verbrannten (DGCN 2002), werden die Waldbrände inzwischen als die bedeutendste Umweltgefahr der Region wahrgenommen. (Tábara 1996).

**Methode**

In der vorliegenden Forschungsarbeit sind qualitative und induktive Analysen und Methoden zum Einsatz gekommen. Die Methode (*Grounded Theory method*) für die Zusammenstellung

Bei der Anwendung der Methode *Grounded Theory*, kann man während der Datengewinnung sehr früh beobachten, dass bestimmte Muster auftreten, die ihrerseits durch zusätzliche Informationen kontrastiert werden bis eine theoretische Sättigung erreicht ist. Als Sättigung bezeichnet man in diesem Kontext, dass der Prozess der Datengewinnung dann gestopt wird, wenn sich die aufgetretenen Muster stabilisieren und neue Beobachtungen keine zusätzlichen Informationen erzeugen. Man hat eine qualitative Methode verwendet, um Motivation und Glauben wie zum Beispiel Zukunftserwartungen, Gründe dafür Waldeigentümer zu sein, die wirtschaftliche Dimension der Waldbewirtschaftung, prizipelle Schwierigkeitsfaktoren etc. und die Beziehungen zwischen diesen zu beobachten.


Eine Charakteristik dieses Ansatzes ist, dass die Resultate nicht auf die Bevölkerung übertragen werden können, wie das bei einer statistischen Analyse möglich wäre. Die *Grounded Theory*) erlaubt jedoch eine tiefgehendere Erforschung der sozialen Struktur der Befragten.

Die ersten Interviewpartner wurden nach dem Kriterium der geografischen Verteilung ausgewählt. Später kamen neue Forsteigentümer zu dieser Auswahl dazu, wenn die generellen Faktoren auftauchten, welche eine Entscheidung für oder gegen ein Forstmanagement beeinflussen. Diesem Typ der theoretischen Probennahme folgend, hat man versucht neue Teilnehmer für die Forschung auszuwählen, die unterschiedliche ökonomische Ausrichtungen in Bezug auf die Bewirtschaftung hatten, obwohl es in vielen Fällen schwer ist die Preferenzen der Eigentümer vorherzusagen bevor man sie befragt.

Man hat Personen befragt, die Ihr Grundstück geerbt oder gekauft haben, junge und alte Personen, Eltern und Kinder, sehr aktive sowie sehr passive Waldbesitzer. Trotz allen Anstrengungen in Bezug auf die Auswahl der Interviewpartner, sind einige Faktoren, welche am Schluss der Forschungsarbeit als relevant eingestuft wurden, erst während der Forschung aufgetaucht oder durch einen Zufall entdeckt worden. Aus diesem Grund hat die Auswahl der spezifischen Interviewpartner für jeden der einzelnen Faktoren nachfolgend und auf Basis der durchgeführten Befragungen stattgefunden.

Die Herstellung des Kontaktes zu den Interviewpartnern erfolgte prinzipiell über die Angestellten in der Forstverwaltung, private Berater aber auch über Referenzen (Eigentümer wiesen darauf hin oder vermittelten uns den Kontakt zu Personen, die interessant für die Forschung sein könnten). Einige wurden auch einfach durch das Befragen von Leuten gefunden (am Arbeitsplatz, in der Universität, in Versammlungen) oder sie einen Waldbesitzer kennen.

Es wurden intensive Interviews durchgeführt die im Mittel eineinhalb Stunden gedauert haben. Es wurde kein offizieller Fragebogen erstellt, aber eine Leitlinie zur Gesprächsführung ausgearbeitet deren Ziel es war das Gespräch flüssig zu gestalten. Die Leitlinie für das Gespräch schloß die Hauptthemen der Forschung aus. Vielmehr wurden generelle Themen wie zum Beispiel die Geschichte oder die Beschreibung des Grundstückes, Veränderungen in der Wahrnehmung des Waldes ansich und andere Fragen oder Themen behandelt, welche es den
Eigentümern erlaubten sich selbst darzustellen und dem Gesprächsführer Freiraum ließen konkretere Fragen zu stellen wenn spezielle Themen auftauchten. Während 43 Interviews wurden 40 Waldbesitzer sowie zwei Spezialisten in mediterraner Biodiversität und Waldbrandbekämpfung befragt.

Die Interviews wurden auf mehr als 1000 Textseiten aufgezeichnet und später kodiert. Die Codes sind im Laufe der Forschung entstanden und veränderten sich von sehr präzisen und beschreibbaren Codes bis hin zu abstrakten und analytischen Kodierungen. Man hat deshalb ein codebook erstellt, um die Kontrolle zu erhöhen und die Koherenz bei Kodierungsprozess aufrecht zu erhalten.


In Übereinstimmung mit dem Ansatz der Grounded Theory, sind die analytischen Kategorien, welche für das Eingreifen der Forsteigentümer in das Management verantwortlich schienen während des Verfahrens zeitgleich zur Feldarbeit und Analyse aufgetreten. Diese analytischen Kategorien standen in Beziehung zu den Faktoren die für die Doktorarbeit als wichtig eingestuft wurden. Aufgrund der enormen Menge erarbeiteter Information, hat man in diesem Dokument einen großen Aufwand betrieben diese zu synthetisieren jedoch gleichzeitig die Essenz der Arbeit zu erhalten.

Resultate und Schlußfolgerungen

Als Ergebnis dieser Studie entstanden vier Kriterien, häufig in Beziehung zueinander, welche auf die Wahrnehmung und die Entscheidung der Forsteigentümer in Ihrem Wald Einfluss haben. Dabei handelt es sich um das Verfolgen einer moralischen Verpflichtung, die Annäherung an ein Leitbild des Waldes, der Glaube, dass die Waldbrände kontrolliert werden können und das Anpassen der Bewirtschaftung an die persönlichen Möglichkeiten des Eigentümers. Die Entscheidungen werden nicht nur durch einen dieser Faktoren beeinflusst, vielmehr ist es eine spezielle Kombination der vier Faktoren, die über die Einwilligung für ein Forstmanagement entscheidet. Diese Faktoren, welche die Aktivitäten und Wahrnehmungen der Eigentümer beeinflussen, wurden in Bezug auf ihre möglichen Auswirkungen auf die Erarbeitung von forstpolitischen Maßnahmen geprüft.

Einer moralischen Verpflichtung folgen

Es existiert eine stillschweigende moralische Verpflichtung zur Erhaltung des Waldes, das dieser im Sinne des Waldes als Teil des vererbten Eigentums gepflegt und unterhalten werden muß. Diese moralische Norm bringt eine positive Tendenz mit sich, hin zu einem Generationenvertrag zwischen Eltern und Kindern, hat aber auch in einigen Fällen bedingt durch den persönlichen Bezug zur Natur und der eigenen Verantwortung zur Erhaltung der Umwelt zu tun. Diese Norm ist in einigen Fällen äußerst stark aber in anderen kann sie sehr schwach oder sogar nicht vorhanden sein. Der Glaube an die Existenz dieser moralischen Verpflichtung begünstigt die Bereitschaft der Forsteigentümer Ihre Grundstücke zu verwalten.

Orientierung an einem Leitbild

Im Gedächtnis vieler Forsteigentümer existiert ein Vorbild, ein Standart der zeigt, wie ein schöner Wald sein sollte. Es gibt kein generelles Leitbild für alle Eigentümer, jeder hat sein eigenes Modell. Dieses Vorbild ist sehr beeinflußt durch die Landschaft die für jede Person als vertraut empfunden wird zum Beispiel durch ein Waldbild aus der Kindheit oder auch durch die erhaltene Bildung in Bezug zum Wald. Der Umstand, Besitzer eines Waldes zu sein der nicht diesem Leitbild entspricht, erzeugt eine Sensation der Unzufriedenheit. Ein Leitbild zu haben verbessert denzufolge die Chancen das der Forsteigentümer sich mit der Waldwirtschaft zu beschäftigen.

Einwirken auf das Waldbrandrisiko
Die Ansicht, dass ein Forstmanagement die Wälder weniger anfällig für Waldbrände macht oder wenigstens deren Schäden reduziert, beinhaltet gleichzeitig den Standpunkt, daß Wälder ohne Forstmanagement anfälliger für diese Probleme sind.

Die Waldeigentümer unterstreichen diese Logik in verschiedenen Stufen; einige unterscheiden zwischen kleinen, durch Bewirtschaftung kontrollierbaren, und großen Waldbränden. Je nach Ansichtspunkt in Beziehung auf das Forstmanagement und die durch Waldbrände entstandenen Schäden sind die Eigentümer mehr oder weniger bereit ihre Grundstücke zu bewirtschaften.

**Anpassung an die persönliche Wirtschaftssituation**


**Struktur der Doktorarbeit (outline)**

Die Doktorarbeit gliedert sich in fünf Blöcke

Im ersten Block “Introduction” werden die persönlichen Motive beschrieben, welche die Durchführung des Forschungsvorhabens nach sich gezogen haben. Des weiteren werden die Zielsetzungen und das Forschungsgebiet näher erläutert.

Im zweiten Block “Approach, Methodology and research development” wird die Auswahl der Grounded Theory diskutiert und gerechtfertigt. Es wird eine detaillierte Beschreibung durchgeführt, da es sich um eine induktive Forschungsmethode mit einem konstruktiven Ansatz handelt.

Im dritten Block “Results and Discussion“ wird diese hervorragende Theorie vorgestellt. Dazu werde die Elemente dieser Theorie erläutert und ein Zusammenhang zwischen dieser und den Forschungsdaten hergestellt. Danach werden die Resultate mit bereit vorhandener Literatur über Forsteigentümer verglichen. Außerdem wird ein kurzer Ausblick gegeben wie die Resultate dieser Arbeit in das Design von Forstpolitik eingehen könnten, um das Forstmanagement zu fördern.

Im vierten Block “Conclusionss“ werden die Schlussfolgerungen der Arbeit beschrieben.
Summary

The management of privately owned forests is a topic that has been widely written about, largely because it is central to land planning and the administration of forest policy in many areas. The level of involvement of forest owners in forest management is lower than might be desired. Many forest owners do not undertake any kind of activity related to wood production or to any other objective on their property. This problem, however, is not specific to Catalonia; forest owners all over Europe are changing the activities they undertake in relation to forest management (e.g. Boon, Meilby et al. 2004; Kvarda 2004; Ziegenspeck, Härdter et al. 2004; Hogl, Pregernig et al. 2005; Schraml 2005). Therefore, the goal of this research study is to contribute to the body of knowledge of how the forest owners and forest managers engage with the management of their properties.

Involving forest owners in some kind of forest management poses a challenge to policymakers. Existing or new forest policy tools should increase their effectiveness by better adapting to the needs of forest owners, and a prerequisite for this is to improve the understanding of how forest owners make decisions regarding their forest lands. Previous studies have taken several intellectual and methodological approaches to the subject, but in general there is a predominant use of hypothetical-deductive, positivistic and naturalistic methods. The methodology of those studies also tends to be extensive, as many of them are statistically-based and with large sample bases (Deane 2004). In contrast, the design of this project is inductive, constructionist and based in a qualitative methodology.

Area of Study

The forest owners that were studied for this research paper were from Catalonia, which is located in the southern Pyrenees Mountains, in the Mediterranean basin of Spain. Sixty-one percent of the surface of Catalonia is covered by woodland and scrublands, (Catalonia is roughly 2 millions hectares, 1.21 hectares of which is covered by trees), and 80 percent of this land is privately owned. There is not an official figure for then exact number of forest owners or forest properties in the region, but recent publications suggest between 50,000 (Vayreda 2004) and 174,000 (Llongarriu 2006) depending the source of information and the area that is considered forest.

Climatic conditions in Catalonia are typically Mediterranean in most of the country, except for the mountainous Pyrenees region. The main forest species are *Quercus ilex*, *Pinus sylvestris*, *Pinus halepensis*, *Pinus nigra*, *Quercus humilis*, and *Pinus uncinata* (located in the Pyrenees). Woodlands populated with *Pinus halepensis* are the most frequent type woodlands in Catalonia (239092 ha, 19% of the forest surface) (CREAF 2004). As in all of the Mediterranean region, the natural vegetation in Catalonia has been disturbed and modified by human activity for centuries, through logging, fire, livestock, and farming (Thirgood 1981), and in the modern era from urbanization, roads and railways, and the expansion of human settlement (Boada 2003; Terradas 2004).

Twenty-five percent of the forest land in Catalonia is managed under a management plan (CPF 2007), and part of the rest is left unmanaged (at least the Government does not have a precise understanding of the management intentions of those property owners) (Vayreda 2004). In economic terms, the forests of Catalonia comprise a very small fraction of the economy (including wood, firewood, cork, hunting and fishing, mushrooms, seeds, wild fruits, and other forest products), as it produces only 1.3 percent of the €3,200 million of the agrarian sector (Vayreda 2004).

In the Mediterranean basin, fire has become an significant problem in recent decades, and it is the main cause of forest destruction, as an average of 500,000 ha are burned each year (Vélez
2002; Tábara, Saurí et al. 2003). In Catalonia, where 1,288 km² burned in the past decade (DGCN 2002), forest fires are perceived to be the main environmental threat to the region (Tábara 1996).

**Methodology**

The methods of research and analysis used in this study were both qualitative and inductive. The grounded theory method of data collection and analysis was used to gather and analyze data (Glaser and Strauss 1967; Charmaz 2006). Grounded theory builds an increasingly complex representation of the social phenomena under study by posing a series of interview questions. Insights emerge from the data itself, in contrast to the hypothetical and deductive methods that test data against predetermined hypotheses.

Using the grounded theory method, observed patterns emerge early in the data collection process and are then contrasted with additional data until a point of saturation is reached. “Saturation” in this context means that data collection processes are concluded only when patterns stabilize and no new information is coming from new observations (Strauss and Corbin 1990). We chose qualitative methods to explore the links between various motivations and beliefs, such as expectations about the future, reasons for owning the land, economical dimension of forestry, primary factors impeding forest management, etc.

In accordance with the methodology, and due to the qualitative and inductive nature of the study, a theoretical-based sampling (Glaser and Strauss 1967; Charmaz 2006) was used to select interviewees. Theoretical sampling focuses on sampling subjects based on the problem being studied and the relevant sociological concepts and categories emerging from the analysis, instead of on the basis of population distribution or stratifications (Glaser and Strauss 1967; Strauss and Corbin 1990). Categories of subjects relevant to the research were identified and then sampled. One feature of this approach is that results cannot be transferred to a large population, as they can be with statistical analysis; instead, grounded theory enables a deeper investigation of the social construction of interviewees.

First, interviewees were selected following criteria of geographic distribution, and afterwards, as the main factors emerged that influenced the decision of whether or not to engage in forest management, new forest owners were selected. Following this theoretical sampling, we tried to select new subjects that took different economical approaches to the forest (although it was very difficult to predict the predilections of different subjects prior to interviewing them). We interviewed people from properties inherited and bought, old and young, parents and children, and very active and passive landowners. Despite the effort that was taken in selecting interview subjects, some of the factors and characteristics that at the end result were found to be relevant were discovered by chance, and the selection of interviews especially relevant to every topic in the analysis was done ex-post, by reviewing the interviews. Interview subjects were mostly contacted through forest service employees, private consultants and chain referrals, but also through word-of-mouth by simply asking people if they knew any forest owner (at work, meetings, or at the university).

Intensive interviews were conducted that ran about an hour and a half, on average. No official questionnaire was ever drafted, but a conversation guide was created that sought to keep the conversation flowing. The conversation guide avoided the main research topics and instead dealt with general subjects, such as, for example, the history of the property, a description of the plot, changes in perceptions of the forest, and other general and indirect topics that allowed the owners express themselves. Forty-five landowners (or managers, in the case of family ownership) were interviewed in the course of 43 interview sessions, and two specialists in Mediterranean biodiversity and wild fires were also interviewed.
The interviews were transcribed, producing more than 1,000 pages of text, which was subsequently coded. The codes were derived from the research, and they evolved from very precise and descriptive codes to more analytical and abstract ones. A codebook was developed and frequently updated in order to keep track of the coding process and to ensure coherence. Fieldwork (interviews and field observations) was conducted between May of 2006 and March of 2007. Consistent with the grounded theory approach, the categories that influenced the engagement with subjects emerged during the data gathering and analysis processes. These categories relate to the factors considered important to the subject of the thesis. As more information was produced, a serious effort was taken to synthesize while capture a storyline at the same time.

There are four, often interrelated key factors that influence the perceptions and decision-making processes of landowners in forested regions: the forest owner’s fulfillment of a moral norm, following a model or standard of forest management, the belief that risk of fire can be controlled with silvicultural management, and the need to conform the needs of the forest to the forest owner’s financial situation. Decisions are not made on the basis of only one of these factors; instead, willingness to participate in forest management more often generates from a unique combination of these four variables.

Fulfilling a moral norm
There exists a tacit moral obligation to preserve the forest in the sense that the forest, as part of the patrimonial legacy, must be cared for and maintained. This moral norm bears a likeness to the intergenerational commitment between parents and children, but it also, in some cases, has to do with personal beliefs concerning the natural word and one’s responsibility to environmental conservation. This moral norm is extremely powerful in some cases, but in others it can be weak or non-existent. Believing and following this moral norm favors forest owners that engage in forest management.

Having an archetype to fit
In the mind of the forest owner there is a model, a standard indicating how a good forest should look. There is no single, standardized model that is common to all landowners; instead, every person can have a personal model. This model is strongly influenced by the landscape that is familiar to a particular landowner, the forests visited during one’s childhood, and even the forestry education that one receives. Owning a forest that is far different from that set archetype can cause feelings of discomfort. Having an archetype to fit increases the possibilities that the forest owner engages in forest management.

Reducing risk of forest fire through management
The belief that forest management makes forests less vulnerable to forest fires (or at least that it decreases the damage caused by fire) leads implicitly to the contrary idea: A forest that is not managed is more susceptible to fire. Forest owners subscribe to this logic to different degrees; some landowners discriminate between small forest fires that can be controlled through silviculture and larger forest fires. Depending on and individual view of the relation between management and the damage caused by forest fires, landowners will be more or less likely to manage the forest.

Fitting one’s economy
Forest management must conform to the financial situation of the landowner, and due to the varying financial conditions of landowners, the implementation of forest management and the rewards gained from the forest can take different forms. This can range from reaping high profit margins from a small plot of land to gaining low profitability per hectare on a much larger scale; or it could simply mean that the amount of capital committed is within the financial mean of the forest owner. Forests can be viewed as a form of capital – as the savings of the family – but it can also be viewed as an expense. None of these three perspectives leads directly to a higher
involvement in forest management; what seems more important is that forest economy fit a forest owner’s expectations and personal budget.

The decision of whether or not to engage in forest management is generally based on several of the four factors – and often all of them – indicating a mix of cultural, psychological and economic influences. Policy tools must capture this diversity of inner motivations and be designed accordingly.
# INDEX

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOREWORDS</td>
<td>i</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>i</td>
</tr>
<tr>
<td>Resümé</td>
<td>ii</td>
</tr>
<tr>
<td>Summary</td>
<td>vii</td>
</tr>
<tr>
<td>INDEX</td>
<td>xi</td>
</tr>
<tr>
<td>I INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1. Personal motivation</td>
<td>1</td>
</tr>
<tr>
<td>2. Setting the problem and objectives of the research</td>
<td>3</td>
</tr>
<tr>
<td>3. Area of study</td>
<td>5</td>
</tr>
<tr>
<td>II APPROACH, METHODOLOGY AND RESEARCH DEVELOPMENT</td>
<td>8</td>
</tr>
<tr>
<td>4 Approach</td>
<td>8</td>
</tr>
<tr>
<td>5 Methodology and research development</td>
<td>19</td>
</tr>
<tr>
<td>III RESULTS AND DISCUSSION</td>
<td>48</td>
</tr>
<tr>
<td>6. Results</td>
<td>48</td>
</tr>
<tr>
<td>7 Discussion</td>
<td>94</td>
</tr>
<tr>
<td>IV CONCLUSIONS</td>
<td>103</td>
</tr>
<tr>
<td>8 Conclusions</td>
<td>103</td>
</tr>
<tr>
<td>V. ANNEXES</td>
<td>105</td>
</tr>
<tr>
<td>ANNEX 1. Interviewees</td>
<td>105</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>109</td>
</tr>
</tbody>
</table>
# Table of contents

**FOREWORDS** .................................................................................................................................................. i

Acknowledgements ............................................................................................................................................. i

Resümé.............................................................................................................................................................. ii

Summary ............................................................................................................................................................ vii

**INDEX** .......................................................................................................................................................... xi
- Table of contents ........................................................................................................................................xii
- Index of tables, figures and pictures ........................................................................................................... xv

**I INTRODUCTION** ........................................................................................................................................ 1

1. Personal motivation ........................................................................................................................................ 1

2. Setting the problem and objectives of the research ................................................................................... 3
   - 2.1 Setting the problem ............................................................................................................................... 3
   - 2.2 Objectives ............................................................................................................................................ 4

3. Area of study .................................................................................................................................................. 5
   - 3.1 Forest land ownership in Catalonia ..................................................................................................... 6

**II APPROACH, METHODOLOGY AND RESEARCH DEVELOPMENT** ................................................. 8

4 Approach......................................................................................................................................................... 8
   - 4.1 Paradigms and approaches .................................................................................................................... 8
   - 4.2 Qualitative versus quantitative approaches to research ........................................................................ 9
     - 4.1.3 Variety of qualitative research ........................................................................................................ 10
   - 4.3 Origins and development of Grounded Theory .................................................................................. 13

5 Methodology and research development .................................................................................................... 19
   - 5.1 Population and area of study ................................................................................................................ 21
   - 5.2 Data collection ....................................................................................................................................... 21
     - The interviews ........................................................................................................................................ 21
     - Interview guidelines ................................................................................................................................ 24
     - Transcription and translation ................................................................................................................... 25
   - 5.2 Sampling strategy: geographical and theoretical sampling .................................................................. 26
   - 5.3 Analytical process .................................................................................................................................... 29
     - Constant comparative method ................................................................................................................ 29
     - Other analytical devices ............................................................................................................................ 30
       - The coding paradigm .............................................................................................................................. 30
       - Situational maps ..................................................................................................................................... 31
   - 5.4 Coding .................................................................................................................................................... 31
     - Segmentation .......................................................................................................................................... 32
     - Searching for coherence .......................................................................................................................... 32
     - Coding strategy ..................................................................................................................................... 33
     - Coding: an iterative process through conceptual thinking .................................................................. 33
   - 5.5 Memoing ............................................................................................................................................... 39
   - 5.6 Sorting ..................................................................................................................................................... 40
     - Diagrams as a tool for sorting and aiding conceptual thinking ............................................................ 40
5.7 Theory formulation............................................................................................................ 43
5.8 Literature analysis ............................................................................................................ 43
5.9 Computer assisted-qualitative data analysis software (CAQDAS) ................................. 43
5.10 Assessing research integrity .......................................................................................... 44
   Ethical considerations in the research stage ..................................................................... 44
   Criteria for evaluating research. ....................................................................................... 45

III RESULTS AND DISCUSSION .......................................................................................... 48

6. Results .................................................................................................................................. 48
   6.1 The emerging theory: the multicriterial decision-making process of forest owners. 48
   6.2 “I want my forest to be good”: The fulfillment of a moral rule and the search for an
      archetype.......................................................................................................................... 54
         6.2.1 “I want the forest to be good” ............................................................................. 54
         6.2.2 Goodness as a measure of proximity to an archetype ......................................... 55
   Nostalgia for the home land forest ..................................................................................... 56
   Nostalgia for past forests ................................................................................................. 57
   Modifying the archetype .................................................................................................. 57
   6.2.3 Goodness as a moral rule ......................................................................................... 59
         Diminishing the moral norm ....................................................................................... 62
   6.2.4 Constructing forest “goodness” .............................................................................. 63
         The clean forest ............................................................................................................. 63
         Accessibility ................................................................................................................ 64
         Visibility ....................................................................................................................... 65
         The differing perspectives of ecologists and forest owners ......................................... 67
         The inconvenience of an untidy forest ........................................................................ 68
         Justifying silvicultural practices .................................................................................. 69
         Improving the wealth .................................................................................................. 70
         Summary ..................................................................................................................... 71
         Strategies and favorable ideas for the management ..................................................... 72
   6.3 “Who say it can’t happen to you?” Managing the risk of forest fire ......................... 72
         6.3.1 The fear of forest fires ......................................................................................... 72
         6.3.2 Perceiving risk .................................................................................................... 74
         6.3.3 Manageable vs unmanageable risk .................................................................... 76
         6.3.4 Risk Factors ........................................................................................................ 77
         Forest visitors increase the risk of fire ........................................................................ 77
         Biomass and neglect .................................................................................................... 77
         Vulnerability of neglected Forests ............................................................................. 78
         6.3.5 Strategies for confronting fire ............................................................................. 79
         Summary ..................................................................................................................... 82
   6.4. “The forest is not profitable any more”: The economics of forest ownership.......... 82
      6.4.1 Three visions of the forest economy ................................................................. 82
      6.4.2 The forest is not profitable, according to three views ......................................... 85
         a. The Forest as enterprise ......................................................................................... 85
         b. The Forest as a bank ............................................................................................... 86
         c. The Forest as an expense ....................................................................................... 87
      6.4.3. Strategies for making forest management economically viable ............................. 88
         Reducing expenses ...................................................................................................... 90
         Requesting financial assistance from the Government ............................................... 91
         Technical innovation to reduce expenses or increase income ..................................... 92
         Expecting better times ............................................................................................... 92
         Searching for other sources of income ...................................................................... 92
         Summary .................................................................................................................... 93

7 Discussion .......................................................................................................................... 94
   7.1 Placing this research in the context of existing literature ........................................... 94
7.2 Fulfilling a moral norm ................................................................. 96
   Policy implications ......................................................................... 96
7.3 Having an archetype to fit .......................................................... 97
   Policy implications ......................................................................... 98
7.4 Reducing risk of forest fire ......................................................... 99
   Policy implications ......................................................................... 100
7.5 Fitting one’s economy ............................................................... 100
   Policy implications ......................................................................... 101

IV CONCLUSIONS ............................................................................ 103
8 Conclusions .................................................................................. 103
V. ANNEXES .................................................................................... 105
ANNEX 1. Interviewees ................................................................. 105
   ANNEX 2: Situational map.......................................................... 106
REFERENCES ................................................................................... 109
Index of tables, figures and pictures

**Tables**

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Comparison of Quantitative and Qualitative Research</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>Main differences between the Glaser and Strauss approaches to Grounded Theory</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>From traditional/positivist Grounded Theory to postmodernism/constructivist orientations of Grounded Theory</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>Some Characteristics of interviewed forest owners</td>
<td>29</td>
</tr>
<tr>
<td>5</td>
<td>Example of code contained in the code book</td>
<td>33</td>
</tr>
<tr>
<td>6</td>
<td>Strategy of codification for special events during the initial coding</td>
<td>34</td>
</tr>
<tr>
<td>7</td>
<td>Groups of substantive codes</td>
<td>38</td>
</tr>
<tr>
<td>8</td>
<td>Relation between substantive codes and conceptual codes</td>
<td>39</td>
</tr>
<tr>
<td>9</td>
<td>Indicators of quality in research</td>
<td>45</td>
</tr>
<tr>
<td>10</td>
<td>Criteria and indicators of research quality and research strategy used</td>
<td>46</td>
</tr>
<tr>
<td>11</td>
<td>Conditions influencing the driving forces</td>
<td>52</td>
</tr>
<tr>
<td>12</td>
<td>Expressions close to the concept “good” found during the interviews and their translation into English</td>
<td>55</td>
</tr>
<tr>
<td>13</td>
<td>Expressions close to the concept “clean and good” found during the interviews and their translation into English</td>
<td>64</td>
</tr>
<tr>
<td>14</td>
<td>Strategies for Confronting the Risk of Forest Fire</td>
<td>79</td>
</tr>
<tr>
<td>15</td>
<td>Strategies for improving the economic yield of forest exploitation</td>
<td>89</td>
</tr>
<tr>
<td>16</td>
<td>Some characteristics of forest owners and other persons interviewed</td>
<td>105</td>
</tr>
<tr>
<td>17</td>
<td>Abstract situational map. Ordered version</td>
<td>106</td>
</tr>
<tr>
<td>18</td>
<td>Resume of the current forest policy tools</td>
<td>107</td>
</tr>
<tr>
<td>19</td>
<td>Identification and description of the line of grants from the Catalan government for forest management</td>
<td>108</td>
</tr>
</tbody>
</table>

**Figures**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Catalonia (white spot) is located at the Mediterranean basin, in the South of the Pyrenees.</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Geographical distribution of public forest land</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>ISI and SSCI citations on &quot;Grounded Theory&quot; (30th October 2006)</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>General Methodological Schematic</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Interview guidelines</td>
<td>25</td>
</tr>
<tr>
<td>6</td>
<td>Location of the properties of the forest owners interviewed</td>
<td>27</td>
</tr>
<tr>
<td>7</td>
<td>Level of abstraction and stages of the research process</td>
<td>30</td>
</tr>
<tr>
<td>8</td>
<td>Example of segment-by-segment codification</td>
<td>34</td>
</tr>
<tr>
<td>9</td>
<td>List of codes after first sessions of open coding (in Catalan)</td>
<td>36</td>
</tr>
<tr>
<td>10</td>
<td>Example of graph used to group codes according to the &quot;coding paradigm&quot;</td>
<td>42</td>
</tr>
<tr>
<td>11</td>
<td>Example of graph representing the logical thinking of a forest owner (arrows show causal relations among propositions)</td>
<td>42</td>
</tr>
<tr>
<td>12</td>
<td>Example of graph used to represent a four criteria decision making process</td>
<td>43</td>
</tr>
<tr>
<td>13</td>
<td>Driving forces on prototypical forest owner Mrs A</td>
<td>50</td>
</tr>
<tr>
<td>14</td>
<td>Driving forces on prototypical forest owner Mrs A-2</td>
<td>50</td>
</tr>
<tr>
<td>15</td>
<td>Driving forces on prototypical forest owner Mr B</td>
<td>51</td>
</tr>
<tr>
<td>16</td>
<td>Driving forces on prototypical forest owner Miss C</td>
<td>51</td>
</tr>
<tr>
<td>17</td>
<td>Driving forces on prototypical forest owner Mrs D</td>
<td>52</td>
</tr>
<tr>
<td>18</td>
<td>Driving forces on prototypical forest owner Mr B simulating the use of an economic forest policy tool</td>
<td>53</td>
</tr>
<tr>
<td>19</td>
<td>Driving forces on prototypical forest owner Miss C simulating the use of an economic forest policy tool</td>
<td>53</td>
</tr>
<tr>
<td>20</td>
<td>Driving forces on prototypical forest owner Miss C simulating the use of an informational forest policy tool</td>
<td>54</td>
</tr>
</tbody>
</table>

**Pictures**

<table>
<thead>
<tr>
<th>Picture</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interviewing</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>Visiting the forest after the interview</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>Sorting through diagramming and organizing memos (labels of memos in the picture)</td>
<td>41</td>
</tr>
</tbody>
</table>
Picture 4: Pine forest (Pinus nigra) with holm oaks (Quercus ilex), with ground vegetation of Genista scorpius, rosmarin (Rosmarinus officinalis) and Juniperus oxiccedrus, defined as “dirty”.  

Picture 5: “Clean” pine forest (Pinus nigra) with holm oaks (Quercus ilex), after having brushed and pruned low branches.
I INTRODUCTION

1. Personal motivation

My interest in forest ownership began in 1997, when I wrote a report to obtain a degree in Forest Engineering. Since then, and thanks to my work at the Forest Technology Center of Catalonia (CTFC), I have carried out different research studies, most of which have taken a quantitative approach, in an attempt to better understand the forest owners of my country. Some of the studies that I conducted include: Multifunctional Forestry as a Means to Rural Development (1992-2002), a project of the 4th research framework program of the European Union, and the Study of the Contribution of the Forests to the Agricultural Income in Catalonia (2003-2005).

Between 2002 and 2006 I had the chance to work on the Regional Forest Plan of Catalonia, which is a general forest policy plan aimed at designing a strategy for the sustainable management of forest land. In the course of writing this plan (which, it might be added, relied heavily on the participation of several stakeholders), it became clear to me that forest owners’ involvement in any kind of policy aimed at sustainable management was crucial. The challenge was to design forest tools oriented towards the promotion of forest management without a clear understanding of how forest owners perceive forests and what motivates their behavior. Very few forest owners relied on financial assistance or subsidies of any kind to help pay for silvicultural work (7,500 out of 50,000 forest owners), and just 2,300 forest owners had any sort of management plan. These figures raised some questions: Why didn’t more forest owners use the subsidy system? And why weren’t they managing their forests?

I started to think seriously about this subject and about the various forces that might keep a forest manager from managing his property. I began to interview people, and I could see the difficulty they had explaining why they had not taken any action in managing their forests. They would offer responses that were along the lines of “I haven’t thought about it,” “I haven’t considered it,” or “Honestly, I don’t know.”

One morning, I awoke with a question on my mind: “Why should forest owners take any action? Nothing forces them to do it, does it? There is no law that forces them to do so, and forestry doesn’t seem to be a very profitable field; I am asking about the reasons for forest neglect, but what is actually more surprising is that some forest owners continue to manage their forests!” Viewing the situation of forest owners in this new light raised more, potentially fruitful questions: How do forest owners perceive their forests? How do they understand their forests? And why do they manage them in the way that they do?

From my work on the forest policy plan, I already had some experience conducting interviews and surveys. I had developed a preference for working with interviews that gave me a deeper knowledge of the topic. However, the rooting of my educational background led me to believe that statistical analysis of the data taken from surveys would be a “more scientific” approach for a Ph.D. dissertation.

Therefore, within the conceptual framework I made two sets of research questions: one set that could be answered with a quantitative methodology (which was my first option), and another that could be answered with a qualitative methodology. Inevitably, I doubted the viability of both methods. I was more familiar with the statistical and quantitative methodology, which is why I opted more for the quantitative approach, but the personal satisfaction that I would get from a qualitative study based on interviews and other studies made me lean towards that methodology. Then, in 2005, at a seminar on forest policy, Andrea Finger, Ph.D. described to me her study of public participation processes in the Alps that she had carried out with a
qualitative methodology. She was very enthusiastic about the research process and the findings, and her experience encouraged me to explore the possibility of conducting a similar study about forest owners.

Because I could not find an expert in forest sociology among the universities in Catalonia, I went to the University of Santiago de Compostela (900 km from home) to ask Manuel Marey, Ph.D., who had written his Ph.D. on the forest owners of Galicia, if he would be willing to supervise my Ph.D. I also contacted the Margaret Shannon, Ph.D., a professor at the University of Freiburg in Germany and Andreas Finger’s supervisor. Professor Shannon knew the forest sector and was specialized in the methodology of qualitative analysis, so I requested her supervision of the more methodological aspects of my study. To my surprise and honor, they both accepted my requests.

At the same time, I began to seek time and financing for my Ph.D. study. Financing of the project was partially provided for by an assignment from the Catalan Department of Environmental Administration (Departament de Medi Ambient de la Generalitat de Catalunya), for a study of forest property. Time for my Ph.D. study was provided by the Government assignment, the generosity of the team I lead in the CTFC – these people had to work without my support and without my help in other projects – and the permission of my supervisors.

The discovery of the inductive and constructive methodology revolutionized my cognitive map so much that I needed a certain time to understand, to accept and to integrate it. The Thomas principle, "If men define situations as real, they are real in their consequences" (Thomas and Thomas 1928), makes me realize how important personal relations to forests are, and how essential is for policy makers have an idea of how forest owners understand their properties, activities that can be undertaken and forest management.

As the process began to unfold, many of my findings piqued my curiosity and led me to want to learn more about classical sociology. I sought out and read several classic sociology texts and all of the grounded theory studies that I could find. I was instantly attracted to the direct approach of research, which placed me in close contact with the interview subjects. And thus, ten years after I decided on the central subject of my study, and almost three years after I discovered the methodology, I have completed this study, which I hope will contribute to a better knowledge of the forest managers of my country and help to design effective and lasting forest policy instruments.
2. Setting the problem and objectives of the research

2.1 Setting the problem

The claim for the elaboration of national forest programs (NFP) have lead many countries to design and implement their own strategies and plans to encourage sustainable forest management. In Catalonia, 75 percent of forest land is privately owned, so public forest policy must deal mainly with the promotion of sustainable forest management among the private forest owners.

Since the 1980s, different instruments have been designed and implemented in Catalonia in an attempt to motivate landowners to behave according to the forest policy goals. Regulatory tools (e.g., the Catalan Forest Act of 1988, Spanish forest act of 2004), Economic tools (e.g. cost sharing schemes) and informational tools (e.g. courses, editions of leaflets) have been designed and implemented (e.g. CPF 2002; CPF 2004; Plana 2004; Vayreda 2004; CPF 2005; CPF 2006; CPF 2007).

However, the participation of forest owners in managing their forests is lower than might be desired. Many forest owners do not undertake any kind of activity oriented towards wood production or to any other objective on their property. For example, although a big effort has been made in the past decade by the forest administration in promoting forest management, only about 2,700 out of an estimated 25,000\(^1\) landowners in Catalonia have a management plan for their properties (Vayreda 2004; CPF 2007). Another example is that in 2007, only 7,300 silvicultural activities were funded with public grants (cost sharing) in a country of 1.2 million ha of forest land. The problem doesn’t seem to be isolated to Catalonia, as forest owners all over Europe are changing, and the forest management activities they perform are changing as well. (e.g. Boon, Meilby et al. 2004; Kvarda 2004; Ziegenspeck, Härder et al. 2004; Hogl, Pregernig et al. 2005).

From the perspective of the achievement of sustainable forest management (what includes ecological, economic and also social aspects), the main problem to be addressed in Catalonia is the forest owners’ engagement or lack of engagement in forest management. In this context, forest management is understood as:

*The art and science of making decisions with regard to the organization, use and conservation of forests and related resources. Forests may be actively managed for timber, water, wildlife, recreation, or a combination thereof. Management also includes the “hands off” alternative: letting nature take its course, which may be the best thing to do in some cases. Forest resource managers must make decisions affecting both the very long-term future of the forest and day-to-day activities* (Buongiorno and Gilless 2003 page 1).

The involvement of forest owners in some kind of forest management poses a challenge for policymakers. New or existing forest policy tools should be an effective means of better adapting to the forest owners’ needs. One pre-requisite for this is to increase understanding of how forest owners make decisions regarding their forest lands.

\(^1\) Estimation varies among 25,000 and 175,000 forest owners according to the source and the minimum area of wooded land or shrub land to be considered forest.
2.2 Objectives

The general objective of this thesis is to contribute to a better understanding of the forest owners in the Mediterranean region. This general objective is summarized in the following research question:

“How do forest owners make sense of the process of engaging or not engaging in forest management?”

1. “The operational objectives of the thesis are as follows:

2. To identify the challenges and supporting factors experienced by forest owners and managers in their current conditions
3. To identify strategies used by forest owners in dealing with challenges, as well as strategies used to strengthen the supporting factors
4. To identify the decision making processes of forest owners regarding whether or not to engage in forest management
5. To construct an emerging theory from an inductive point of view explaining the process that leads forest owners or forest managers to engage or not to engage in forest management
3. Area of study

The forest owners that were studied for this research paper were from Catalonia, which is located in the southern Pyrenees Mountains, in the Mediterranean Basin of Spain (Figure 1).

![Catalonia (red spot) is located at the Mediterranean basin, in the South of the Pyrenees.](image)

Catalonia is roughly 2 millions ha, 1.21 million ha of which is covered by trees, and about 80 percent of this land is privately owned. About 60 percent of the surface of Catalonia is covered by woodland and scrublands. Climatic conditions in Catalonia are typically Mediterranean in most of the country, except for the mountainous Pyrenees region. The geographical distribution of the tree species is strongly related to the climatic conditions and the geological substrate - chalky or siliceous soils- (Espelta 2004).

The main forest species are *Quercus ilex*, *Pinus sylvestris*, *Pinus halepensis*, *Pinus nigra*, *Quercus humilis*, and *Pinus uncinata* (located in the Pyrenees). Woodlands populated with *Pinus halepensis* are the most frequent type woodlands in Catalonia (239,092 ha, 19% of the forest surface) (CREAF 2004). As in the entire Mediterranean region, the natural vegetation in Catalonia has been disturbed and modified by human activity for centuries, through logging, fire, livestock, and farming (Thirgood 1981), and in the modern era from urbanization, roads and railways, and the expansion of human settlement (Boada 2003; Terradas 2004).

Twenty-six percent of the forest land in Catalonia that are privately owned have management plans (CPF 2007), and at least part of the remaining land is left unmanaged -or at least the forest administration does not have a precise understanding of the management intentions of those property owners- (Vayreda 2004). In economic terms, the forests of Catalonia comprise a very small fraction of the economy (including wood, firewood, cork, hunting and fishing, mushrooms, seeds, wild fruits, and other forest products), as it produces only 1.3 percent of the €3,200 million of the Catalan agrarian sector (Vayreda 2004).

According to Vayreda, who when making calculations took into consideration the limitation caused by more than 60 percent topographic slope and a minimum of 70% of the surface covered by the crowns of the trees, and he determined that about the 35% of the forest land of Catalonia (430,000 ha) is suitable for commercial timber logging (Vayreda). Vayreda also notes that the timber logging is currently just 25-50 percent of the growing average (Vayreda).
Timber growing and timber production have a strong geographical variation. Prices have decreased about 5 percent per year since the 1970s (50 percent in the past 15 years). Firewood prices have also decreased at a rate of 2.7 percent per year (and 40 percent in the past 15 years) (Vayreda).

In the Mediterranean basin, fire has become a serious issue in recent decades, and it is the main cause of forest destruction, as an average of 500,000 ha are burned each year (Vélez 2002; Tábara, Saurí et al. 2003). In Catalonia, where 1,288 km² burned in the past decade (DGCN 2002), forest fires are perceived to be the main environmental threat to the region (Tábara 1996).

3.1 Forest land ownership in Catalonia

Forest land in Catalonia is, in general, privately owned. Despite the inconsistent data from different sources (the Agrarian Census, the National Institute of Statistics, the National Forest Program, National Forest Inventory, etc.), public forest land is less than 25 percent of the total forest land in Catalonia, which means that private land is at least 75 percent³ of the total surface of forest land (IEC 2002; IFN 2007).

The data regarding the number of forest owners is also highly variable, depending on the source. According to the agrarian census, there are 21,438 agro-forest harvesting lands, but that number would drop down to 1,016 if we only consider forest harvesting lands (IEC 2002). The agrarian census only takes into account lands that are actively harvested, so it only takes stock of forest owners that harvest their forests and who are registered in the census. This data differs greatly from the data taken from the 2002 cadastre – the public register of land ownership – for which 174,775 forest owners are registered.

Figure 2: Geographical distribution of public forest land
Source: (CREAF 2005)

According to the cadastre data, land sizes tend to be smaller than 1 ha in 50.75 percent of properties. Forest owners with lands greater than 100 ha only represent 1.67 percent; and

---

² E.g. Annual timber growing for Pinus sylvestris ranges from 2.5 m³/ha/year and 4.8 m³/ha/year.
³ According to the data taken from the Third National Forest Inventory in Catalonia regarding the total forest land, only 14.25% is a public land, including the forest municipal lands, the autonomic community government lands and lands from other administrations or private enterprises.
according to the agrarian census, 76 percent of the agro-forest lands in Catalonia are less than 20 ha in size.

In terms of geographical distribution, there are more forest owners in the south, where land properties are smaller and less timber productive. However, the highest rates of forest land per capita are found in the Pyrenees and other mountainous areas (and they mainly belong to the state, municipalities, or are communal).
II APPROACH, METHODOLOGY AND RESEARCH DEVELOPMENT

4 Approach

The theoretical framework of this project is the Grounded Theory methodology, originally developed by Anselm Strauss and Barney Glaser in their book The discovery of Grounded Theory (Glaser and Strauss 1967).

4.1 Paradigms and approaches

In the natural sciences, it should seem rather strange to begin the approach section with a discussion of the paradigm. Most research in the field is done within a positivist paradigm, which for years has been seen as the paradigm, the only valid one, and thus there has been little need for epistemological clarification. A positivist epistemological position subscribes to a unitary scientific method consisting of objective, systematic observation and experimentation on an external world, holding the assumption or the belief that discoverable “truth” exists (Guba 1990; Schwandt 1990). The goal of positivistic research is to discover general laws that explain the phenomena under study and allow predictions to be made. For positivists, the aim is to generate data which is valid and reliable, independent of the research process. Positivists want their findings to be applicable to the entire subject of analysis (O'Leary 2004), and they are generally quantitative studies represented by numerical data (Fay 1996). Positivists stress objectivity, generality, replication of research, and the falsification of competing hypotheses and theories. It is also assumed that the researcher is an unbiased, objective and passive observer who collects facts but does not participate in creating these.

There is no universal doctrine in the social sciences (Silverman 2006) Instead of defining a single paradigm; the social sciences feature many paradigms, approaches, and traditions in the universities and disciplines, and research teams use some of them more frequently than others. Therefore, unlike the positivist paradigm, other paradigms exist within the social sciences, and chief among them in the context of this research is constructivism.

Constructivism can be defined as a social scientific perspective that addresses the construction of various realities (Charmaz 2006). This perspective assumes that people, including researchers, construct realities in which they participate. Constructivists acknowledge that their interpretation of the phenomena is also a construction (Crotty 2003; Charmaz 2006; Cisneros-Puebla 2007), which is a recognition that has consequences throughout the research process. For example, the way in which data (e.g. interviews) is gathered, the role played by the researcher as an objective or subjective agent, and also in the narrative style of reporting the results, to name a few (Hammersley and Atkinson 1983; Burr 1995; Gergen 1999).

In relation to the model of theory generation, for years the model of theory generation in natural science research was the hypothetic-deductive model. This model is seen as a process of testing hypotheses by means of experimental strategies. In this model, a hypothesis derives from “researcher’s speculations or happy guesses” (Kelle 2005). Researchers derived hypotheses from the theory, and main elements of them are operationalized so that the hypothesis can be tested. Characteristically, in this hypothetic-deductive model, the hypotheses are always elaborated before the empirical data is collected. In the 1970s, this model was discussed by empirical researchers within the history of science because the hypothetic-deductive model was unable to provide an adequate account of the process of a large number of scientific discoveries, even in natural sciences. There are other models of theory generation, including the inductive model, which is very popular in the social sciences. The inductive model, in contrast to the hypothetic-deductive, seeks to derive hypotheses from the data observed in a process that moves from specific observations to broader generalizations and theories at the end.
4.2 Qualitative versus quantitative approaches to research

Qualitative approaches gather research that is carried out under different methodologies, approaches and paradigms. For years, quantitative methods (strongly linked to natural science research, positivist paradigms and the hypothetic-deductive models) were seen as the “good” way of doing Science, or the “gold standard” (Silverman 2006 page 36). Despite their broad use though, quantitative methods are not valid for answering every kind of research question. There are areas of social life that cannot be measured by statistics. Therefore, the main strength of qualitative research is that it allows phenomena that are unavailable to study with a quantitative approach, to be studied by thick description and inductive analysis. Silverman, points out in this extract, the most important difference between the two approaches:

While their approach (the quantitative) can tell us a lot about inputs and outputs to some phenomenon, it has to be satisfied with a purely “operational” definition of the phenomenon and does not have the resources to describe how that phenomenon is locally constituted... As a result, its contribution to social problems is necessarily lopsided and limited (...) qualitative research can use naturally occurring data to find the sequences (how) in which participant’s meaning are (what) are developed and thereby establish the character of some phenomenon) (...) The operational definition facilitates the measurement but can lose the sight of the way that the social phenomena become, what is it a particular context and sequences of action. (Silverman 2006 pages 43-44)

According to Silverman, in quantitative research the phenomenon is often missing and attention is only paid to the related inputs and outputs. In contrast, the phenomenon is the focus of the research using qualitative methods. To illustrate the difference using an hypothetic example related to forests: With means of a quantitative approach we could know, for example, that female forest owners tend to undertake less or more harvesting activities than men, but only through a qualitative approach would it be possible to enter into the phenomena and discover how it happens and why women harvest more or less than men. Qualitative methodologies allow researchers to get a deeper understanding of the “black box” that connects the variables “gender” and “harvesting behavior.”

The debate over the philosophy and epistemology of research was very productive in the last half of the 20th century (Laws and McLeod 2004; Kelle 2005), and since the 1980s, after much debate, a deeper valuation of the strengths of qualitative research can be stated. In the field of forestry, Bliss and Martin (1989) were among the first to use a qualitative approach to study forest owners. They also stressed the differences between the two approaches, focusing on the purpose, design, sample, type of questions answered, unit of analysis, kind of data analyzed and results and they point out the value of the approach; advocating the utility and complementarity of the qualitative orientation (Table 1).

<table>
<thead>
<tr>
<th>Table 1: Comparison of Quantitative and Qualitative Research</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
</tr>
<tr>
<td>Purpose</td>
</tr>
<tr>
<td>Design</td>
</tr>
<tr>
<td>Sample</td>
</tr>
<tr>
<td>Unit of Analysis</td>
</tr>
<tr>
<td>Analysis</td>
</tr>
<tr>
<td>Data</td>
</tr>
<tr>
<td>Results</td>
</tr>
</tbody>
</table>

Source: Bliss and Martin (1989)
Proof of the increasing interest in the research using the qualitative approach (especially since the last decade) has been demonstrated in the recent publication of works focusing on the analysis of the criteria, uses and techniques of qualitative research (e.g.: Patton 1990; Coffey and Atkinson 1993; Miles and Huberman 1994; Strauss and Corbin 1994; Denzin and Lincoln 2000; Bogdan and Bicklen 2003).

As Trinidad mentions, (Trinidad, Carrero et al. 2006) new works have emerged that dig deeper into not only the description of a set of techniques, but also into the bases and criteria for designing the qualitative analysis of data (e.g: Merriam 1988; Patton 1990; Tesh 1990; Wolcott 1992; Miles and Huberman 1994; Morse 1994; Wolcott 1994; Mason 1996; Boyatzis 1998; Creswell 1998; Rodriguez, Gil et al. 1999; Valles 1999; Trinidad, Carrero et al. 2006).

The qualitative approach cannot be defined by the kind of data used, as can be done with text, images and also numerical data (Glaser and Strauss 1967; Glaser 1978), but it is instead distinguished by a special attitude, a different insight into the social world (qualitative insight) that defines the process of data transformation (Wolcott 1992; Alonso 1998). Silverman (over Hammersley and Atkinson 1983) mentions a set of preferences held by qualitative researchers:

- Preference for qualitative non-numerical data
- Preference for naturally occurring data, observation rather than experiment, unstructured data versus structured interviews
- A rejection of natural science as a unique model
- A preference for inductive, hypothesis-generating research rather than hypothesis testing

In addition, Miles and Huberman (1994 page 9) grouped the analytical practices that are common across the different types of qualitative research:

- Affixing codes to a set of field notes drawn from observations or interviews
- Noting reflections or other remarks in the margins
- Sorting and shifting through these materials to identify similar phrases, relationships between variables, patterns, themes, distinct differences between subgroups, and common sequences
- Isolating this patterns and processes, commonalities and differences, and taking them out into the field in the next wave of data collection
- Gradually elaborating a small set of generalizations that cover the consistencies discerned in the database
- Confronting those generalizations with a formalized body of knowledge in the form of constructs or theories

4.1.3 Variety of qualitative research

Qualitative research can be conducted in different ways, many with long traditions behind them (Miles and Huberman 1994). As was shown above, the increasing interest in social sciences, specifically in qualitative methods, has led to the production of many studies and the spread of the methods beyond the social sciences (Clarke 2005). The classification of Grounded Theory among the traditions and styles of qualitative research is difficult, for three main reasons:

a) Classifications vary according to the criteria selected for sorting
b) The existence of more than one way of doing Grounded Theory
c) The dual condition of Grounded Theory as an approach or as an analytical technique.

a) Classification varies according to the criteria selected for sorting
As a result of intensive work that has been done in analyzing qualitative research, classification of the traditions in qualitative analysis has been done from different approaches. The classifications are done according to different criteria, such as “style of data collection,” “focus,” “assumptions about human nature,” and “goals,” etc.

Jacobs (Jacob 1987), for instance, used criteria like “focus,” “methodology,” and “assumptions about human nature and society” to define 5 major qualitative research traditions: ecological psychology, holistic ethnography, ethnography of communication, cognitive anthropology and symbolic interactionism.

A classification of 27 categories was built by Tesch (1990) in the course of conducting research that focused on the “characteristics of the language,” “the discovery of regularities,” or “the comprehension of the meaning” of a text or action. Tesch made a major distinction between structural analysis and interpretational analysis and, within the latter, between analysis oriented towards constructing theory and descriptive-interpretative analysis.

Patton (1990) sorted the different types of qualitative research according to “the kind of questions a researcher will ask” and identified 10 traditions: ethnography, phenomenology, heuristics, ethnomethodology, symbolic interactionism, ecological psychology, systems theory, chaos theory, orientational inquiry, and hermeneutics.

Wolcott (1992), for instance, sorted the traditions according to the style of data collection (observation, interviewing and archival strategies) and organized about 20 strategies into a tree shape. Nine years later, he realized that some strategies (like case study) were not well placed in his analogy, and he invited readers to develop new branches, or to develop sections in a deeper detail when using the analogy of the tree (Wolcott 2001).

O’Leary (2004) classifies the methods according to the subject of the analysis (a) the words that are used, (b) the concepts that are discussed, (c) the linguistic devices called upon (d) and the non-verbal cues notes by the analyst. According to these goals, she mentions as major strategies: content analysis, discourse analysis, narrative analysis, conversation analysis, semiotics, hermeneutics and Grounded Theory.

This (co-)existence of different classifications is not inherent to Grounded Theory, but it affects all kinds of qualitative research, and as the debate progresses and the lines between epistemologies become blurred, there is a claim for flexibility instead of adherence to strict methodological rules (Miles and Huberman 1994).

**b) The existence of more than one way of doing Grounded Theory**

*The Discovery of Grounded Theory* (Glaser and Strauss, 1967) was written by B. Glaser and J. Strauss in 1967 and it was based on their research involving dying patients and the awareness of death. The publication of the book was the beginning of the spread of one of the most outstanding methods in qualitative approach that had its own goals and methodology. Over time, the creators of the methods followed somewhat divergent paths, not only in terms of the methodology of Grounded Theory in principle, but also regarding how it is put into practice (Dey 1999). The divergences between the two fathers of the method were at the center of the debate for years (Stern 1994; Kelle 2005), and some authors have tried to understand the roots and the positioning of Grounded Theory in a general framework within the theoretic-methodological perspectives of the social research.

However, the success of the approach – its spread to new fields and the emergence of new paradigms in social sciences (such as post-modernism) – has meant that nowadays there are different scholars engaging with Grounded Theory with different perspectives, methodological
assumptions and approaches (Bryant 2002 (Seale 1999; Bryant 2002; Charmaz 2003; Clarke 2003). As Dey remarks, there are not just two ways of doing Grounded Theory, but there are “as many versions of Grounded Theory as there are Grounded Theorists” (1999 page 2). Dey also points out that, since the major authors disagree over fundamentals, there is a little point in arguing over what should be regarded as the “correct” version of Grounded Theory. Despite the intense debate, for some authors like Parker and Roffey (1997 cited in Raymond 2005) stated that this epistemological differences makes no major difference to the results of the research.

The main differences among Grounded Theory theorists in the beginning (1980s-'90s) were the more or less structured procedures (see also Table 2), the test of the results (linked to the inductive-deductive models) and the incorporation of preconceived theoretical ideas into the research. Another difference strongly emphasized by Glaser in his latest publication (Glaser 2003) is the differentiation of “true” Grounded Theory –conceptually oriented- from other methodologies oriented to description. Strauss’s approach is more closely connected with Tesch’s (1990) classification of analysis that is centered on description and interpretation, while Glaser’s approach is more consistent with the processes of generating theory (Trinidad, Carrero et al. 2006 page 21). Nowadays, however, the main axes of the debate are the positivistic paradigm on one side and constructivism on the other (e.g. Charmaz 2000; Bryant 2002; Bryant 2002; Urquhart 2002; Bryant 2003; Glaser 2003; Clarke 2005).

c) The dual condition of Grounded Theory as an approach and analytical technique

In 1967, Grounded Theory was named by B. Glaser and A. Strauss as a “way” of generating theory grounding in data, without using the words “methodology,” “method,” or even “strategy” (Glaser and Strauss 1967). In contrast, in 1978, Glaser defined it as a method, and Strauss, in 1987 (Glaser 1978; Strauss 1987), as a particular style of qualitative analysis. Many other definitions can be found in the literature, ranging from an “approach” or “style” or “perspective” to the broader ones (Strauss 1987; Dey 1999; Atkinson, Coffey et al. 2003; Clarke 2005) ranging from methodology and methods (Glaser 1978; Raymond 2005; Trinidad, Carrero et al. 2006) to a technique of analysis, and combinations of these (e.g. Trinidad et al. defined it as an approach and method of analysis).

The increasing interest in the methodology leads to an increasing number of research studies that adopt these methods. In a current content data search (ISIC and ISIC) on “Grounded Theory,” 3,378 citations were found, 2,220 since October 2006 (Figure 3). Grounded Theory has become an important qualitative research approach, not only in sociology (Strauss and Corbin 1997) and nursing (Schreiber and Stern 2001), where it started, but also in other fields like organizational and management studies (Locke 2001), science, technology, medicine (Clarke and Star 2003), social work (Riessman 1994), education (Bogdan and Bicklen 2003), and recently in new fields, such as natural resources management (e.g. Tuler and Webler 1999; Finger 2006). Few projects related to forestry and forests were found: one about participation in forest processes (Tuler and Webler 1999), one about perceptions of forest fires (Carroll, Cohn et al. 2004), and another about financial incentives that only used – and very partially – the coding technique in the analysis (Church and Ravenscroft 2008).
The central question of the ongoing debate is whether Grounded Theory is considered as a technique of analysis or a methodological approach for generating theory. Dey (1999) shows some examples from nursing research publications in which it was used to “focus group interviews for collecting data and analyzing using Grounded Theory methods.” The partial utilization of Grounded Theory as a technique of analysis has caused concern among theorists. Stern (1994) believed that this misuse was eroding Grounded Theory and blamed it for the supposed dilution of the canons of inquiry. According to him, one of the causes of this is learning the process of Grounded Theory without methodological mentors. This partial use of the methodology concerns him because some studies that claim to be Grounded Theory are far from the actual approach.

I wonder if – in the Internet era – the spread of Grounded Theory methodology and its acceptance in the research field as a legitimate method would have happened if it had only been passed down from Glaser and Strauss to pupils. In my opinion, and agreeing with Dey (1999), the increasing use of the method’s analysis technique, and its spread to other fields apart from nursing and social science is proof of its power and strength.

In any case, what seems really important is to clarify what use is made of Grounded Theory in research (Stern 1994). A good example of this is the paper by Garay et al. in 2002 (2002) about blood donation. In the methodology description in the abstract they stated that “the analysis followed partially the prescriptions of Grounded Theory,” and in the methodology there is an explanation about the part of Grounded Theory that was used and the part that was not (Garay, Íñiguez et al. 2002).

4.3 Origins and development of Grounded Theory

Grounded Theory methods were presented in 1967 by sociologists Barney G. Glaser and Anselm L. Strauss in their book, The Discovery of Grounded Theory. They were collaborating

---

4 In forest Church says in the methodology that “open ended questions and interview where analyzed using content analysis. Initially an Straussian approach (Strauss and Corbin 1990) was adopted that used open codings to identify key themes emerging for interviews. This was further adapted in the later stages if the analysis to use a more experiential coding technique” Church, A. and N. Ravenscroft (2008). "Landowner responses to financial incentive schemes for recreational access to woodlands in South East England." Land Use Policy 25: 1-16.
in studies of dying in hospitals. They observed how dying occurred in a variety of hospital settings, looking at how and when professionals and their patients knew that they were going to die and how they faced and handled the news. As Glaser says (1978), the interest in writing the book arose from the success of their previous book, *Awareness of Dying* (Glaser and Strauss 1965) and as an answer to the question, “How did you do it?”

While constructing their analysis of dying, Glaser and Strauss developed systematic methodological strategies useful for social scientists studying many other topics. In *The Discovery of Grounded Theory* (Glaser and Strauss 1967), these strategies were first articulated and advocated for developing theories from research “grounded” in data rather than deducing testable hypotheses from existing theories. This methodological approach was a polemical work (Dey 1999) that attacked and broke the predominant theoretical modes, principles of hypothetic-deductive research (Haig 1995; Wagennar 2003), and it established Grounded Theory as an alternative approach.

The polemic grew around the deductive ways of theorizing in which theories were speculated on and then “tested” against evidence through research. The deductive mode gives the research a role as verifier, rather than generator of theory. In opposition to this, Glaser and Strauss presented an approach working closely with evidence in which data collection and analysis provided a sound basis for generating theory.

In addition, the work of Glaser and Strauss reinforced the qualitative methods, as Charmaz indicates (Charmaz 2006 page 4):

> Glaser and Strauss entered the scene at a propitious time, in a moment in which qualitative research in sociology was losing ground. Beliefs on unitary methods of systematic information, replicable experiments, operational definitions of concepts, logically deduced hypothesis, and confirmed evidences (taken as the scientific method) formed the assumptions supporting quantitative methods. These assumptions supported positivism, the dominant paradigm of inquiry in natural sciences. Positivistic assumptions at that time stressed objectivity, generality, replication of research and falsification of hypotheses and theories. Sociologists adopting this paradigm aimed to discover causal explanations to make predictions about an external and knowable world. They believed in the possibility of reducing qualities of human experience to quantifiable variables. For them, only narrowly scientific (that is, quantitative) ways of knowing held validity, and they rejected other possible ways of knowing as interpreting meanings or intuitive realizations.

Glaser and Strauss also criticized the lack of rigor and the theoretical insignificance of the empirics in sociology. Summarizing, Charmaz (2006 page 6) states that in their book, Glaser and Strauss (1967) challenged:

- Beliefs that qualitative methods were impressionistic and unsystematic
- Separation of the data collection and analysis phases of the work
- Prevailing views of qualitative research as a precursor to more “rigorous” quantitative methods
- The arbitrary division between theory and research
- Assumptions that qualitative research could not generate theory

Over time, the creators of the method evolved in somewhat divergent directions. To understand the later evolution of the method, it is necessary to know the origins of the cooperation between Glaser and Strauss. Grounded Theory comes from the marriage of two rival traditions that are generally known by the name of the well known institutions where they originated: Columbia University positivism and Chicago School pragmatism and field research rooted in symbolic interactionism (Robtrecht 1995; cited in Dey 1999).
Glaser received his Ph.D. in sociology from Columbia University and held the position of lecturer in Sociology at Columbia University and at the University of California School of Nursing, San Francisco Medical Centre, and he became a professor of Sociology of the California University at San Francisco. He came from a long tradition of quantitative research and was strongly influenced by the works of Lazarsfeld and Barton (Lazarsfeld 1937; 1950; 1955; 1961; 1962; Burton and Kates 1964), as well as K. Merton (Merton 1966), S. Lipset (Lipset 1960) and also H. Zetterberg and A. Gouldner (Trinidad, Carrero et al. 2006). The epistemological assumptions, logic and systematic approach of Grounded Theory methods reflect Glaser’s rigorous quantitative training with Paul Lazarsfeld. Glaser even tried to codify qualitative methods, as Lazarsfeld did with quantitative research. Glaser was also influenced by Merton, a Columbia University theorist who developed the concept of “middle range” theories. These types of theories consisted of an abstract interpretation of the specific social phenomena grounded in data.

Strauss studied and taught at the University of Chicago. His background lay in the symbolic interactionist tradition of qualitative research, as practiced at the University of Chicago. The symbolic interactionist perspective assumes that interaction is dynamic and interpretative, and that it addresses how people create, enact and change meanings and actions. Through the influence of Herbert Blumer (1969), George Herbert Mead (1934/1962), and Robert Park (Park and Burgess 1921; Park 1952), Strauss came to adopt both symbolic interactionism and the Chicago legacy of ethnographic research (Charmaz 2006; Trinidad, Carrero et al. 2006).

The cooperation between the two scientists was fruitful and produced notable results. However, the different approaches that they each brought to the table led to a different evolution of the method by each of the two authors, who perhaps, as Stern suggests, never shared the same viewpoint about the processes (Stern 1994). After several years of working apart from one another, in 1978, Glaser published *Theoretical Sensitivity*, and in 1987 Strauss wrote *Qualitative Analysis for Social Scientists*. The terminology and procedures were not identical in both books. Glaser introduced the concept of family codes, while Strauss introduced new concepts such as axial coding, diagramming as a basis of the method, and sequences of memos. However, these differences apparently caused no real schism between the authors. Despite the differences, all of their published works “express an identical stance toward qualitative analysis and suggest the same base procedures” (Strauss and Corbin 1990 page 8).

In 1990, Strauss wrote *Basics of Qualitative Research: Grounded Theory Procedures and Techniques* with Juliet Corbin, which was a detailed guide to conducting research. As stated in the preface, the book was not only addressed to sociologists but also to professionals interested in inductive building theory. The book, by providing a very standardized collection of tools and strategies with examples, allowed researchers without an intensive and comprehensive background in social science in professional practices (like nursing) to conduct research using the method. According to Glaser (1992), this book betrayed the principles of Grounded Theory, and in 1992, he published a new book, *Basics of Grounded Theory analysis* with the aim of “correcting the distortions” of Strauss and Corbin’s book. Since then, the scientific community engaged in Grounded Theory began referring to the *Glaserian approach* and the *Straussian approach*. The differences have been analyzed by many authors (Table 2) and have fueled the debate between Grounded Theory practitioners.
Table 2: Main differences between the Glaser and Strauss approaches to Grounded Theory

<table>
<thead>
<tr>
<th>Selection and Identification of the problem</th>
<th>Glaser</th>
<th>Strauss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of an area of activity. The problem emerges in the study framework.</td>
<td>Identification of a phenomena or Research problem. The researcher can predetermine the topic before going into the field.</td>
<td></td>
</tr>
</tbody>
</table>

| Method of codification and analysis | General framework based in the constant comparative method, categories emerge and cannot be forced by the methodology. | Analytic method with structured steps. Structures and techniques are detailed. |

| Nature of emerging theory | Concepts and relations are generated in order to explain and/or interpret variations in the substantive area studied. | Generates a theory inductively derived in relation to a phenomena through interrelated concepts. |

| Validation of the theory | To be done in quantitative analysis (carried out in the future). | Provisional test for the validity of the concepts and their interrelations. |


| Use of literature | Literature used after the analysis. | More liberal. All kind of literature can be used in advance. |


| Aim of the analysis | Analysis mainly theory building. | Analysis descriptive-interpretative. |


For some authors, this debate is irrelevant because the general approach is the same and therefore it doesn’t make a major difference when researching (e.g. Raymond 2005), and for others, it makes no sense to engage in a debate of the Glaserian and Straussian approaches because there are as many versions of Grounded Theory as there were “grounded theorists” (Dey 1999 page 2).

The Grounded Theory debates also had a place on the ontological and epistemological level (Dey 1999). After almost 40 years of debate about the ontological and epistemological orientation of Grounded Theory, there seems to be a clear division between the (post)positivist and the constructivist approaches. The constructivist approach of Grounded Theory was reported by Anthony Bryant, Adele Clarke and Kathy Charmaz (Charmaz 2000; Bryant 2002; Bryant 2003; Clarke 2003). These authors claim that Grounded Theory needs to be reconstructed from a more constructivist approach that considers the role of the researcher and his or her interaction with the participants in the understanding of phenomena. Through their choices, researchers play an important role in the research. They understand the original positivist methods as corresponding to the years when it was discovered (the 1960s), and it is difficult to maintain such an approach after the evolution in social science over the last 40 years with the emergence of hermeneutics and interpretative perspectives. (Bryant 2002) Therefore, the evolution of the method is natural and parallel to the evolution of the social sciences.

Glaser is situated in the episte-onto-methodological axis of positivism and strongly criticizes constructionist approaches (Glaser 2002). He positions research in a objectivistic situation, accepting that objective reality exists, and claiming a “pure” Grounded Theory, it is uncontaminated by the principles of descriptive qualitative research (Raymond 2005).

On the side of the (post)positivist we can found authors like Brian Haig, who considers Grounded Theory as a scientific method (1995), and proposes a (re)adaptation of Grounded Theory based on the principles of explanation/verification of the positivist method of research.
The ideas of “truth” and “hypothesis,” as well as the deductive method, appear to be shown as compatible with Grounded Theory in the process of reaching a higher degree of scientific validity (Raymond 2005).

Furthermore, other authors question the need to position Grounded Theory as a method. Urquhart (2002 cited in Raymond 2005) states that a sensible way of looking at Grounded Theory is to separate philosophical matters from the coding process, as Grounded Theory is much more frequently used as a method of codification than as a general method of understanding research (e.g. Church and Ravenscroft 2008). What seems important in this context would be the definition done of the use of Grounded Theory when reporting research.

Table 3 shows the main differences between the positivist and the Constructivist/postmodernist approach to Grounded Theory according to Clarke (2005)

<table>
<thead>
<tr>
<th>Positivist/Realist Grounded Theory</th>
<th>Constructivist/Relativist Grounded Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>* All the following should be assumed to hold only part and never all of the time</td>
<td>** All of the following should be assumed to be followed by “if and as found in the data”</td>
</tr>
<tr>
<td>Positivist/Realist</td>
<td>Constructivist/Relativist</td>
</tr>
<tr>
<td>Dualism of subject and object</td>
<td>Continuities of subjects and objects</td>
</tr>
<tr>
<td>Discovering/findings</td>
<td>Constructing/making</td>
</tr>
<tr>
<td>Correspondence theory of truth</td>
<td>Constructionist theory of knowledge production</td>
</tr>
<tr>
<td>Naïve objectivity</td>
<td>Non-innocent subjectivity/reflexivity</td>
</tr>
<tr>
<td>(over)homogenization</td>
<td>Multiple positions</td>
</tr>
<tr>
<td>(over)generalization</td>
<td>Heterogeneous representations</td>
</tr>
<tr>
<td>A priori rejection of contradiction as possible</td>
<td>Representations of contradiction(s) as analyzed/interpreted</td>
</tr>
<tr>
<td>Simplifications desired</td>
<td>Complexity represented</td>
</tr>
<tr>
<td>Seeks to be conclusive</td>
<td>Tentative, opening, jarring, troubling</td>
</tr>
<tr>
<td>Authority of author “expert” voice dominant</td>
<td>Multiples voices, perspectives, intensities, reflexivities</td>
</tr>
<tr>
<td>(False/overdrawn) clarity</td>
<td>Ambiguity of representation</td>
</tr>
<tr>
<td>Normal/average plus negative cases</td>
<td>Difference, range of variation, outlier, positionally</td>
</tr>
<tr>
<td>Tactily progressive; linear</td>
<td>Doubtful, reads against the grain</td>
</tr>
<tr>
<td>Assumption of normativity</td>
<td>Assumption of positionality</td>
</tr>
<tr>
<td>Metaphors of normal curve</td>
<td>Metaphors of cartography</td>
</tr>
<tr>
<td>Goal: To delineate a basic social process and formal theory</td>
<td>Goal: To construct processes, sensitizing concepts, situational analytics, and theory.</td>
</tr>
</tbody>
</table>

Source: Clarke (2005 page 32 )

**A basic description of Grounded Theory**

Grounded Theory is an empirical approach to the study of social life through qualitative research and analysis (Clarke 2005 page xxxi). Grounded Theory methods consist of systematic and flexible guidelines for collecting and analyzing qualitative data to construct theories grounded in the data themselves (Charmaz 2006 page 2).

*In this method the analyst initially codes the data and gives temporally labels (codes) to particular phenomena. The analyst determines if the codes generate through one data source also appears elsewhere and elaborated their properties. Related codes that have endured are then densified into more enduring and analytical ambitious categories and these are ultimately integrated into a theoretical analysis of the substantive area (Clarke 2005 page xxxi).*

After a section reporting the differences between approaches to Grounded Theory, the main point would be to see the commonalities among the approaches. Creswel (1998) pointed out the main characteristics of Grounded Theory:
• The aim of Grounded Theory is to generate or discover a theory through data rather than through prior hypotheses
• The researcher has to set aside theoretical ideas to allow a “substantive” theory to emerge
• Theory focuses on how individuals interact in relation to the phenomenon under study
• Theory asserts a plausible relation between concepts and sets of concepts
• Theory is derived from data acquired through fieldworks interviews, observations and document
• Data analysis is systematic and starts as soon as data becomes available
• Data analysis proceeds by identifying categories and connecting them
• Further data collection (or sampling) is based on emerging concepts
• These concepts are developed through constant comparison with additional data
• Data analysis proceeds from identifying categories (open coding), properties and dimensions; through examining conditions, strategies and consequences (axial coding) to selective coding around an emerging story line
• The resulting theory can be reported in a narrative framework or as a set of propositions
5 Methodology and research development

The approach of this research is both qualitative and constructivist. It is constructivist in the sense that emphasis is placed on how landowners construct meaning and interpret their own actions, and on the overarching logic of their experience. The selected methodology has a strong inductive character, as it is more oriented to describe and interpret field observations than to test the hypotheses of academic theories. A qualitative approach has been selected because, although with quantitative methods it is possible to obtain a precise image of certain phenomena, a qualitative approach encourages in-depth analysis of the processes, ultimately producing a more dynamic vision. Additionally, the qualitative approach provides an opportunity for deeper comprehension and thorough analysis and interpretation of the studied processes while avoiding stereotyped and simplified answers. Instead, the qualitative method helps the researcher to gain access to the various perspectives and explanations that research participants provide for their own actions.

Although the data gathered and analyzed using a qualitative method is less precise than that of a quantitative method, research standards can still maintain a high level of rigor. A qualitative method should necessarily work within a delimited study area and not allow for generalization of the results. And when done properly, qualitative studies can achieve the highest level of detail, transparency and precision. Qualitative studies provide valid information about the meaning that people give to their actions and their interactions with others, and, on the other hand, qualitative approaches require direct contact with the subjects of inquiry, which often takes place in the form of a dialogue (Garay, Íñiguez et al. 2002).

Grounded Theory (Glaser and Strauss 1967; Strauss and Corbin 1990; Charmaz 2006), which is a means developing a sociological theory through qualitative research and analysis, was selected for this particular study because it places particular emphasis on inductive reasoning, and because it is theory building. This methodology, which is becoming increasingly popular in the social sciences (Clarke 2005), encourages the inclusion of the participants’ points of view that do not necessarily fall within the structure of a pre-existing analytical framework.

There are several ways of applying the Grounded Theory to research, but they should all share the defining components of Grounded Theory, as they are enumerated by Glaser and Strauss (1967; Glaser 1978; Strauss 1987). Of these methods, the most crucial involve the collection of data, the repeated probing and comparing of data results, and thorough review during and after the writing stages. More specifically, Glaser and Strauss call for, in the beginning stages, simultaneous involvement in data collection and analysis on the part of the researcher. As data is collected, they prescribe the use of analytic codes and categories that are derived from the data itself rather than from preconceived hypotheses. Throughout the research and analysis, Glaser and Strauss call for the use of the constant comparative method, which involves drawing comparisons between various categories and codes throughout each stage of the analysis. As a function of this type of analysis, advanced theory development should take place during each stage of collection and analysis, according to the basic tenets of Grounded Theory.

Specific tactics are enumerated by Glaser and Strauss as well; chief among them is memo writing, which is used to elaborate categories, specify their properties, define relationships between categories, and to identify gaps in research. The final stages of analysis in Grounded Theory involve sampling that is aimed toward theory construction and conducting a literary review after developing an independent analysis. Subscribing to these practices enables the researcher to gain control of the research, and it also promotes powerful analysis of qualitative interviews (Glaser and Strauss 1967; Charmaz 1983; Charmaz 1990; Strauss and Corbin 1990; Bigus, Hadden et al. 1994; Glaser 1994; Stern 1994; Strauss and Corbin 1994; Charmaz 2003).

The basic phases of research (most of which overlap) include:
- Data collection
- Coding
- Memo writing
- Sorting
- Writing
- Comparing with existing literature on the topic

The elements of this general and synthetic scheme are developed in the following sections of the chapter.

However, the actual procedure of applied Grounded Theory involves a somewhat more complicated, schematic approach (Figure 4). In the first stages, the area of inquiry must be conceived of and located, and a relevant site for the collection of data must be selected. Then, with the collection of data, ideas should be generated, recorded and further explored through comparisons (see constant comparative method description on page 29). Next, connections should be formed from the ideas that emerge from these comparisons, which in turn should be integrated into a selected theme. In the final stages, data should be coded, sorted, thickly thoroughly described, and new samples should be collected if necessary. (Dey 1999)

The conceptual development of the theory formulation process is as follows:
The research analyst initially codes the data (using open coding) word-by-word, line-by-line or segment-by-segment and gives labels (codes) to particular phenomena. Afterwards, the analyst determines if the codes generated through one data source also appear elsewhere, and he or she elaborates their properties. Related codes that have endured are then condensed into more analytical categories, which are ultimately integrated into a theoretical analysis of the substantive area (Clarke 2005).
5.1 Population and area of study

The people studied in this research study are forest property owners located in Catalonia. Private forest owners have been given a number of different names to fit the criteria of particular research studies, such as: non-industrial forest owner, small-scale forest owner, family forestry, etc. Some authors have discussed what name is better suited to what kind of forest owner (e.g. Finley, Jones et al. 2001; Wiseman 2003), while others have positioned themselves in favor of one particular title because of traditional use and data associated with it (Zhang, Zhang et al. 2005).

In this research study, the name forest owner has been used to describe people with property rights to lands with trees and shrubs. Individuals that lack legal rights but that make decisions about the forest with the authorization of the actual property owner – such as, for example, another member of the property owner’s family – have been also considered. However, this definition of a forest owner excludes forest property that is owned by the state, municipalities, or property that is communally owned.

5.2 Data collection

The main sources of information in this research study have been interviews, observation notes and the analysis of extant recorded documents such as maps, management plans, and general forest statistics. Field observation has been used to enhance the data gathered in the interviews, and documents were referred to when the information provided by the interview subjects required additional support. However, the most important source of information and the basis of the work have been interviews.

The interviews

The majority of existing published qualitative research studies rely on interviews as a main source of data (Silverman 2006). According to Lofland and Lofland (1984) and other authors (Lofland and Lofland 1984), an interview can be defined as a directed conversation, in the sense that there are not structured queries and the stream of questions is essentially fluid (Lofland and Lofland 1984; Minichiello, Aroni et al. 1990; Rubin and Rubin 1995; Kvale 1996). From the different kinds of existing interviews (structured interview, semi-structured interview, open-ended interview, focus group, etc), the selected method for interviewing were open-ended questions in intensive interviewing, as has long been a useful data-gathering methods in various types of qualitative research.

The combination of flexibility and control inherent to intensive interviewing fits perfectly to Grounded Theory’s strategies, it was considered suitable for increasing the analytic emphasis of the resultant analysis (Charmaz 2006). Intensive method of interviewing enables depth exploration of a topic. Intensive interviews are also oriented to make visible the participant’s interpretation of his or her experience, which makes it appropriate for an interpretative style of research such as a Grounded Theory study.

When using these methods, it is recommended that interviewers devise a few broad, open-ended questions with an aim of eliciting unanticipated responses from the interview subject. During the course of the interview, it is also important to supplement and refine those questions with more detailed and precise follow-up questions for each topic that is discussed. A good rapport with the interviewee, active listening skills, and a great deal of flexibility are all also required. Active listening, in this context, as Noaks and Wincup suggested (2004), means that the interviewer, while keeping in mind the overall goals of the particular interview, should provide
an opportunity for the interview subject to speak freely and to ascribe meaning and interpretations to his or her own experiences. The main role of the interviewer is therefore to understand the topic, observe with sensitivity, and to help the interview subject to describe and reflect upon his or her experiences (Charmaz 2006).

However, as Charmaz underscores, despite the conversational nature of the interview, it must follow different guidelines than a normal conversation. The researcher should demonstrate interest and a desire to know more, requesting clarifying details in order to obtain accurate information to learn about the interviewee’s experiences and reflections. The interview should create an opportunity for the interviewer to delve beneath the surface of described experiences in order to explore certain topics in detail, to request more detail, to ask about personal thoughts, feelings and actions, etc. According to Fontana and Frey (2000), special attention should also be paid to detail while interviewing; particularly to how the interviewer presents his or her self (as a researcher, as a student, as a woman, etc.), gaining and maintaining trust, and establishing good rapport with interview subjects.

During the research, a set of different strategies were displayed in order to deal with the topic of gaining trust. I presented myself as a person doing a Ph.D. thesis about forest owners in Catalonia, explaining that the questions were going to be about quotidian actions, and they were also told that it was not necessary to show official documentation related to the property or management plans. To gain the trust of the interviewees, I found that it was important to be introduced by someone else from the social environment of the forest owner, and when possible, a person known by the forest owner would talk to him or her about the research.

Additionally, while conducting the interviews, techniques such as maintaining eye contact, displaying interest and understanding without making appreciative or critical comments were displayed (e.g.: using “mm-hmm, yes, okay, right,” etc., and smiling and nodding to show understanding and help the interviewees to expand in their answers). Another, less obvious technique that was considered very important to gaining the trust of interviewees was allowing them enough space to express themselves. This involved leaving a certain amount of silence to allow them a more reflexive talk, giving time to think about the answers and going back and forward with the questions. Another common technique that was employed to put the interview subjects at ease was the use of jokes to create a friendly atmosphere.

The interviews were recorded, and during the interviews notes were taken. These notes were useful to underscore key words that were later incorporated into the conversation as themes to be explored in more depth. A total of 47 people (45 forest owners) were interviewed through 45 interviews, and every interview lasted between 45 and 180 minutes. Basic characteristics of forest owners in the hermeneutic unit$^5$ were tabulated (Table 4 and Table 16). As will be explained in the sampling chapter, a theoretical sampling was applied, which involved collecting theoretical concepts, not individual persons.

$^5$ Total unit of analysis.
Most of the interviews were conducted in quiet places, normally around a table. At the beginning of the research, some interviews were conducted while having a walk through the forests owned by the interviewee. The experience was interesting, but the noises recorded (breathes, footsteps on leaves and branches, etc) increase the difficulty of transcribing the interviews, and many words were missing. Therefore, following interviews were done in quite places and afterwards – depending on the forest owner’s willingness and availability – a walk through the forest was done. The walk was important in terms of taking field notes, to link images to the descriptions made by the forest owners, and also to get new information in a more relaxed environment.

Sometimes the walk through the property was not taken the same day as the interview. In such cases, field notes were especially important, as the forest owners tend to make reflexive comments about the interview conducted days ago. Forest owners showed favorite places on their property, places where they were undertaking any kind of silvicultural activity, and places with management problems, etc.

Picture 2 shows one of the forest owners interviewed – together with one of the supervisors of this thesis – in front of a tree (Pinus nigra) that has been declared a monument by the government because of its unusual shape.
Meaning of interview data from a constructionist approach

From a social constructionist approach, data produced from an interview is a particular representation of an individual view or opinion (Byrne 2004; Silverman 2006). Therefore, interviews do not provide data about “true facts, neither lived experienced;” instead, interviews give access to representations of experiences. It is not possible to uncover facts or realities behind the what is said in an interview; what can be obtained is a “form of talk,” which represents a cultural means of packaging experience (Kitzinger 2004). As an example, Kitzinger demonstrates how the answers given by women are not representative of an inherently “female” way of knowing, but are constructed within the context of established social discourses (patriarchal, heterosexist, etc). According to the principles of social constructionism, the accounts are part of the worlds they describe and provide basic information on points of view, rather than mere representations of life or reproductions of previous realities (Hammersley and Atkinson 1983; Murphy and Dingwall 2003). A constructivist approach emphasizes the definitions of terms, situations and events, and it attempts to tap into the interview subject’s assumptions, tacit rules and implied meanings (Charmaz 2006) rather than focusing more on behavior, events and chronology, as in a more positivistic approach.

The constructionist approach considers experience to always be embedded in a social web of interpretation and reinterpretation. Constructionism is concerned with what interviewees are saying, but also with how they choose to express themselves (Holstein and Gubrium 1997). Charmaz (2006) added that an interview is both contextual and negotiated between the two parties. What participants choose to tell the interviewer is a construction of reality. An interview reflects what interviewers and participants bring to the interview, which include – but are not limited to – the impressions that are created during the interview and also the relationship that is forged in the course of the interview.6

Interview guidelines

Glaser and Strauss (1967) advocate an open-ended interview with a guided hand offered by the interviewer to ensure that the data is relevant. Rigid adherence to the rules and protocols during the entire interview, as proposed by some types of qualitative research, is an impediment to discovery, and it should therefore be avoided (Strauss and Corbin 1998). Glaser was critical of premeditated questions, assuming that in effect, it can be an attempt at “forcing data” (Glaser 1978).

Following those recommendations, the questions in the present work were designed as a device to maintain the flow of the conversation and encourage explanations about personal meanings of actions undertaken. Questions were introduced in the conversation to stimulate the interviewee to talk, but additional questions to explore or clarify were introduced at any time. The separation of themes in the questionnaire was more systematic than real, as no question was considered a priory more important than other, (until the development of the methodology point out some of them, in a later step).

In order to have a set of well thought questions oriented to give the forest owners room to express their own views and to enable topics that are important to him or her to emerge, an interview guide – not a questionnaire – was developed (Figure 5). The questions were only used as a way of opening the interview and fueling conversation when there were lulls. During the

6 Interview Data from a Positivistic Approach
In opposition to the meaning of interview data from a constructivist approach, from a positivist approach, interview data provides access to facts about the world. Even if they offer biographical information or statements about personal beliefs, interview data must be considered as accounts linked to facts (Silverman 2006). Normally measures like standardization or the forming of a relationship between the interviewer and the interviewee defined by a protocol have been developed.
interview, new questions gave way to the concepts that emerged from data, and new questions were formulated in order get deeper insights in the concepts explained by the forest owners.

Figure 5: Interview guidelines

| Presentation/privacy/importance of his/her participation
| Questions
| 1. Tell me about your forest or property. What does it look like? How is it?
| 2. Do you go there? When? What do you do when you go to your property?
| 3. How did you become a forest owner? What happened? How have your views towards the forest changed since then?
| 4. What actions do you take in your plot (what, when, who, where, why)? How do you decide what to do? Who marks the wood to be cut?
| 5. Is there anything you would like to do that you don’t? What prevents you from doing so?
| 6. Do the neighbors undertake similar activities?
| 7. How did you learn to manage your forest?
| 8. What or who helps you in managing your forest? What problems do you encounter? What are the sources of these problems?
| 9. What is the most important lesson you have learned since you became a forest owner?
| 10. If you had to select one, what has been the most important moment as a forest owner?
| 11. How do you see your forest in 25 years?
| 12. Please describe the good and bad aspects of being a forest owner.
| 13. What advice would you give to somebody who is going to become a forest owner?
| 14. What are your goals for the property? When you think about your property, how do you see it? What do you expect to get from your forest? Have you thought about selling or buying more land?
| 15. Do you have any favorite place in your forest? Where is it? Why do you prefer this specific place? How it looks like?
| 16. Do you know the physical limits of your property? Are they somehow marked? Do you have a map?

| General information: Age, primary source of income, tree time, main tree species, place of residence, location of the forest.
| Conclusion/thanks/agreements about privacy and feedback.
| Final questions
| 1. Do you have any questions for me? Do you want to ask me anything about this research?
| 2. Do you think there is anything important about you and the forest I have not asked about?

Transcription and translation

The interviews were recorded and subsequently transcribed with Digital Voice Editor 2 software. This software allows the user to control the speed of the voice reproduction, making the transcription easier, but it is not a form of automatic translation. Following recommendations about the treatment of field data, the transcriptions were done as soon as possible after each interview, and they were checked against field notes and corrected when necessary (Dick 2000).

In some disciplines of qualitative analysis, the use of standardized symbols is strongly recommended when transcribing, as in the tradition of the Gail Jefferson system (Jefferson 1985; Hutchby and Wooffitt 1998; ten Have 1999). The use of conventions while transcribing is especially important in disciplines such as hermeneutics, conversational analysis or discourse analysis where the object is to analyze the oral expression more as a construction than as a register. After considering the relative benefits and inconvenience of following a system of transcription, a simplified interim standard for transcription was established due the fact that the
goal was not a discourse analysis or hermeneutic research, and also for the ability to listen to the audio file at any time when reading the transcription on the computer. The following symbols or font types were used in the transcription:

- **Boldface** was used for the interviewer and standard font for the interviewee
- The name of the person speaking was given every time there is a change of speaker
- Explanation in brackets for:
  - laughs: (laughs)
  - noise while thinking: (thinking)
  - long silence …. (silence)
  - short silences …

Indications for missing words, short silences and explanation of non-verbal symbols (for example, special movements of the hands to indicate “a lot,” “money,” “20 cm,” etc.) were also incorporated into the text. The transcription sought to capture direct quotations from the subjects; all the words, silences, noises, and swear words were included in the transcript. However, when including fragments into the final document, the texts have been subjected to professional writing standards, deleting word repetition as well as utterances, ticks and involuntary or unnecessary sounds, while endeavoring to maintain the original meaning of what was said. Additionally, pieces of text from the interviews, included in the text as examples, have been translated to English with an attempt to remain faithful to the respondent’s exact meaning, instead of conducting a verbatim translation that might lead to confused meaning. The aid of a bilingual interpreter to translate from Catalan and Spanish into English was required to ensure that the essence and details of the interviews were captured. This person only translated the segments suitable to be included in the final report.

The protection of the identity of the interviewees was ensured by eliminating from the interviews of the names and surnames that could lead to the identification of individual forest owners. Names of properties and municipalities were also deleted. In order to not completely lose the geographic location, the names of the counties where the forest properties were located were substituted for the name of the villages. When names and surnames appear in the excerpts and results sections, they do not correspond to real names. In the text, expressions used by the persons participating in the research and the segments taken out from the interview were written in italics.

The transcription of the interviews produced a document of more than 1,000 pages. Most of the interviews were conducted in Catalan, and two in Spanish. The document with all the interviews was not translated into English, but only the segment selected to illustrate the text. The transcription of the interviews was a very time consuming process; it was calculated that it took about 25 hours per interview to convert the audio file into the final written text.

### 5.2 Sampling strategy: geographical and theoretical sampling

Theoretical sampling focuses on sampling subjects based on the problem being studied and the relevant sociological concepts and categories emerging from the analysis, instead of on the basis of population distribution or stratifications (Glaser and Strauss 1967; Strauss and Corbin 1990). Categories of subjects relevant to the research were identified and then sampled. First, interviewees were selected following a criteria of geographic distribution, and later, as the main factors influencing the decision of whether or not to engage in forest management were emerging, new forest owners were selected following the theoretical sampling.

At the beginning of the research – before the main themes of forestry and Mediterranean forest owners were refined – a somewhat random strategy was employed. The main aim of this strategy was to encounter and record a wide variety of different situations. Because it was
difficult to foresee the activities conducted or the opinions of the forest owners before the first interview, geographical criteria was used. Forest engineers working for the government in seven different counties were contacted, along with two forest consultants who served to facilitate contact between forest owners or managers in the region. These interviewees were not selected on the basis of any specific characteristics, nor were age, size of property, gender, or activities taken into account.

In a second phase of the research, a method of theoretical sampling was implemented. Theoretical sampling is a method in which the researcher aims to describe and analyze the properties of the developing categories or theory (Charmaz 2006), instead of sampling randomly selected populations or representative distributions of a particular population. In this type of sampling, the researcher seeks people, events or information to illuminate and define the boundaries and relevance of the categories. This strategy for sampling can help the researcher to avoid becoming trapped in unfocussed analyses (Glaser & Strauss 1967; Glaser 1978, 1998; Strauss 1987).

Two different kinds of theoretical sampling were conducted. The first one was to look for more people to interview that were more likely to give further insights in the area analyzed. So, for instance, when developing the categories related to the economic situation of forest, people whose main source of income was the forest were selected to be interviewed. In one example, people attending a seminar on hardwood were contacted, as they were more likely to invest in
plantations. The second way of theoretical sampling consists in looking and reanalyzing interviews that have already been conducted. This was used, for instance, to gather information on attitudes about wild forest fires. It was not possible to select a priori forest owners to be interviewed according to their positioning about wild forest fires because their point of view about it only comes out during long conversation. Therefore, the strategy used for theoretical sampling was selecting the interviews ex-post.

In relation to the first way of conducting the theoretical sorting – searching for different people from diverse situations to give insight to the emerging categories – different groups of people were selected in hopes of increasing the probability of getting rich data for completing the theory. It is important to point out that the theoretical sampling does not search for specific or representative people, but rather for people that fall within specific categories, such as parents and children from the same family and people attending a seminar on hardwood plantations. Despite the effort that was taken in selecting interview subjects, some of the factors and characteristics that at the end result were found to be relevant were discovered by chance.

The number of interviews and the duration of the sampling process were defined by theoretical saturation, which can be understood as the point at which gathering more data about a theoretical category reveals no new properties and fails to yield any further theoretical insights about the emerging grounded theory (Charmaz 2006 page 113). It was difficult to find a balance between the interest in interviewing new research participants and the personal capacity of processing and understanding data. In the tradition of Grounded Theory, the number of interviews tends to be very low – often less than 10 (e.g. Verd 2001). According to some authors (Stern 1994; Glaser 1998), a limited sample should not present a problem because the aims of Grounded Theory methods are to develop conceptual categories, not to represent populations. Therefore, data collection is directed towards discovering the properties of the categories and the relationships among them. In this research, theoretical saturation was considered to be achieved around interview number 45.

Interview subjects were mostly contacted through forest service employees, private consultants and chain referrals, but also by simply asking people if they knew any forest owner (at work, meetings, or at the university).

A total of 45 forest owners were interviewed through 43 interviews. The group of people interviewed ranged from 16 to 78 years old, and their property sizes ranged from 2 to 2000 ha. Two additional interviews were also conducted with two forest scientists. Some characteristics of the forest owners were tabulated (Table 4 and Table 16). According to the approach and the methodology, it doesn’t make any sense to compare this data with general population, as the results are not intended to describe the whole population. It doesn’t make either any sense relate codes to persons as the description focuses on processes rather than individuals and also because as the codification has been done progressively there is not a single code that have been used in all the interviews.

---

7 According to Dey (1999), theoretical sufficiency would be a better expression, because the researcher never can be sure than a new interview would not introduce a new property; however the researcher should decide not to include more data when the categories and theory emerged is sufficient. It is also important to consider if the number of interviews conducted leads to the credibility in the research field Dey, I. (1999). *Grounding Grounded Theory: Guidelines for qualitative enquiry*. London, Academic Press.

8 Calculation per hour of interview (average):
   - Transportation to the site: 3,5 h
   - Time of interview: 1h
   - Time of presentation, hellos and goodbye: 20 m
   - Time for transcription (including revisions): 19 hours
Table 4: Some Characteristics of interviewed forest owners

<table>
<thead>
<tr>
<th>Origin of the property</th>
<th>Age of the forest owner (estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inherited from the family:</td>
<td>&lt;20: 2</td>
</tr>
<tr>
<td>Inherited (but the property has not a long tradition): 7</td>
<td>20-30: 7</td>
</tr>
<tr>
<td>Bought:</td>
<td>30-40: 12</td>
</tr>
<tr>
<td>Inherited and Bought:</td>
<td>40-50: 12</td>
</tr>
<tr>
<td>Others*:1</td>
<td>50-60: 3</td>
</tr>
<tr>
<td>Forest fire in the area (own property or county)</td>
<td>60-70: 7</td>
</tr>
<tr>
<td>Yes: 22</td>
<td>&gt;70: 2</td>
</tr>
<tr>
<td>No: 23</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Main activity of the landowner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male: 29</td>
<td>Agrarian (forest, crops or cattle): 18</td>
</tr>
<tr>
<td>Female: 16</td>
<td>Others: 27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education in forest/agriculture</th>
<th>Living in the property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes: 12</td>
<td>Yes: 16</td>
</tr>
<tr>
<td>No: 30</td>
<td>No: 29</td>
</tr>
<tr>
<td>Unknown: 3</td>
<td></td>
</tr>
</tbody>
</table>

5.3 Analytical process

Constant comparative method

The inherent and basic analytical method of Grounded Theory is the constant comparative method (Glaser & Strauss 1967). The constant comparative method is the search for similarities and differences through the analysis of the incidents in the data. This method involves inspecting and comparing all of the data arising in a particular case (Glaser and Strauss 1967). “Incidents” in this usage describes individual units of text that seem interesting to the analyst, and it can refer to an activity or action, an idea, a sentence, or a word.

The cornerstone of the constant comparative method involves drawing comparisons between data, codes and categories in order to advance the conceptual understanding of the theory by defining the analytical properties of categories under rigorous scrutiny (Charmaz 2006). This is done through a meticulous process in which the analyst asks his or herself if the incidents analyzed are comparable to another one. If the incident that is being analyzed is similar enough to an incident already analyzed it will be coded under the same code. If the incident that is being analyzed is different from any other previous incident already coded, then a new code is created and the incident that is being analyzed gets a label with a new code name describing it.

In the beginning of the process of codification, mostly concrete incidents are coded, and as the analyst advances, more abstract and theoretical incidents are analyzed. For example: In the first group of codes (Table 7), thinning, hunting, and sorrow or low prices are labels describing actions or very concrete parts of the descriptions. In contrast in the final group of codes (Table 8), the codes refer to more conceptual concepts like emotional impact and reducing expenses.

The analysis takes a more theoretical turn when trying to place the data in a theoretical category. Through comparing similarities and differences, the researcher can generate a better conceptual understanding and characterization based on repeated patterns. As Trinidad, Carrero and Soriano (2006) indicate, this method should be differentiated from a scientific test of hypothesis because both its means and end is to generate conceptual categories and properties.

As the name suggests, the constant comparative method is applied at several different stages of research (Trinidad, Carrero et al. 2006). While writing memos, the incidents indicated by each

---

* This property was inherited from a friend.
category can be compared; while comparing incidents, the categories can be delimited and their properties defined. When comparing categories with concepts, the scope and range of the theory emerges (Charmaz 1983). In relation to the research stage at which it is applied, the constant comparative method involves three stages: integration of categories and its properties, conceptualization and reduction of the theory, and finally, theory writing (Glaser and Strauss 1967).

The level of abstraction of categories and their properties varies; they are likely to emerge from data at a lower level of abstraction (Dey 1999 page 7) but as initial concepts are compared and contrasted more abstract and integrating concepts can emerge (Figure 7).

Figure 7: Level of abstraction and stages of the research process

Other analytical devices

Different strategies have been proposed for the theoretical development of the analysis within the framework of Grounded Theory. Charmaz (2006) considers all of these devices to be valid, as they contribute to the analysis, encouraging the use of any them as long as they do not force the analysis into pre-established directions. In this research, several analytical devices have been used at different points for different purposes. The most relevant analytical devices used were the coding paradigm and the situational maps.

The coding paradigm

Strauss and Corbin emphasize the importance of interaction among conditions and consequences (Strauss and Corbin 1990). Although the distinctions between conditions, actions and interactions may seem blurred (Dey 1999), the main point is that conditions at all levels must be specified and linked. Specific conditions must be linked to consequences through their effect on interaction (Strauss and Corbin 1990).

The elements of the coding paradigm, according to Strauss, are: causal conditions, phenomena, context, intervening conditions, interaction strategies and effects. They were defined as follows by Strauss and Corbin (1990)
Causal conditions: Events, incidents, happenings that lead to the occurrence or development of a phenomenon.

Phenomena: Central ideas, events and incidents about which a set of actions or interactions is directed at managing, handling, or to which the set of actions is related.

Context: The specific set of properties that pertain to a phenomenon; that is, the location of events or incidents pertaining to a phenomenon within a dimensional range. Context represents the particular set of conditions within which the action or interactional strategies are taken.

Intervening conditions: The structural conditions bearing action or interactional strategies that pertain to a phenomenon. They facilitate or constrain the strategies taken within a specific context.

Action/Interaction Strategies: Strategies devised to manage, handle, carry out, and respond to a phenomenon under a specific set of perceived conditions.

The coding paradigm was especially useful when analyzing the activities, mainly silvicultural works, carried out by the landowners. Thinking in terms of strategies linked the activities with goals and effects and contributed to raising the conceptual level of the analysis.

Situational maps

Foucault (e.g. 1965; 1972; 1975) displaced the analytical focus on the isolated individual and moved it towards the inclusion of his or her environment. This shift emerged in 1975 with the development of the actor-network theory carried out in the research of Latour, Law and Akrich, among others (Latour and Woolgar 1979; Akrich 1995; Law and Hassard 1999). Several thinkers have raised the question of how context can be integrated into Grounded Theory research. Through the conditional matrix, Strauss and Corbin (1990) identify a range of conditions from global concerns to particular actions and suggest that the links between them must be traced, at least for the especially pertinent incidents. They have been working in recent years on finding ways to articulating structural conditions in a way that would make them visible in the analysis. For an interactionist researcher, the structural conditions are the elements of situations that remain constant and are, therefore, predictable (Blumer 1969; Strauss 1993; Clarke and Star 2003; Clarke 2005). In general terms, this element can be described as “context.”

Situational maps (Clarke 2005) are devices that are oriented to help the analyst. The situational map gathers the most relevant information related to the site, the key element in a given situation that even if they do not appear in the interview are coconstitutives. Following Clarke (2005), human and non-human elements, political and economic aspects, temporal and spatial dimensions, discursive constructions of human and non-human actors, major issues and debates (usually contested), symbolic and metaphysical dimensions, as well as discourses and other elements were captured (Table 17).

5.4 Coding

The systematic coding of text, which is done through the constant comparative method, is one of the key elements in qualitative data analysis (Strauss and Corbin 1990; Miles and Huberman 1994). Despite Lonkila’s claim that in Grounded Theory the terms “coding” and “codification” lack precise definitions (Lonkila 1995), coding can be understood as an operation in which interviews are broken down and segments of data are categorized and assigned a short name.
Coding contributes to the processes of conceptualization, summarizing and accounting for every segment of data that is gathered and put back together in new ways (Strauss and Corbin 1990; Charmaz 2006). Therefore, in Grounded Theory and in this study, under the “coding” heading we include the coding itself (the assignment of an inductive code to every unit or register) and categorization (the conceptual classification of these codes) as parts of the same process (Rodriguez, Gil et al. 1999).

Codes can be applied in different ways (Bernard 1994; Seidel and Kelle 1995). However, when used in Grounded Theory, the primary aim is to tag pieces of text for retrieval and to conceptualize data for further analysis. Furthermore, the act of coding does not summarize the text; instead it adds information through a process of interpretation (MacQueen, MacLellan et al. 1998). Two types of categories that emerge from the coding process coexist: categories that are defined by the analyst and those that are defined by the interview subjects (also named in vivo codes). In this sense, Verd remarks on how the subjects of the analysis are taken, not only as a source of information, but also as a source of categorization through the use and adaptation of the categories they use (Verd 2001). In this study, both types of names for the labeling – the ones provided by the forest owners and the ones provided by the analyst – were considered to give name to the codes.

**Segmentation**

The data collection strategy involved in-depth interviews that produced minimally structured data, which led to non-straightforward text segmentation. The segmentation was done, segment-by-segment and code-by-code, using the constant comparative method and analyzing meanings at every step. No rules for bounding segments were established a priori (such as sentences, paragraphs, or grammatical guidelines that might require the inclusion of subject references). The use of formal units of analysis, such as sentences or grammatical guidelines, also risked changing the style of the transcription or the kind of narrative used by the interviewee. Instead, the segments were continuously redefined during the analysis to include only the word, a set number of lines above or below the word, and the full paragraph or a set of paragraphs.

As MacQueen et al. indicates, the style of segmentation adopted in this study is quite close to the traditional system of marking text or placing a tag over a word or phrase with the boundaries of the segment floating (MacQueen, MacLellan et al. 1998). Therefore, the segment is occasionally delimited by the intervention of the interviewer, and at other times, a slight change to the topic is introduced by the interviewee himself or herself; occasionally, only a sentence is included, while in other cases a complete set of paragraphs is included. When the intervention of the interviewer was needed in order to place a particular response into context or to understand the meaning of the answer, that intervention was also included in the analysis.

Although this strategy was adopted from the beginning, the Grounded Theory method recommends beginning codification by attempting a word-by-word and line-by-line codification with the first interviews analyzed (Charmaz 2006). This method of codification is a heuristic device that is added to the document to improve organization and also to help inspire new ideas. When reading and coding line-by-line or sentence-by-sentence, the attention paid to details increases and there is less risk of incorporating the mental structure of the researcher into the analysis instead of the meaning imparted by the interviewees. This strategy was deployed in the first three interviews as a means of breaking the ice. Although this process is very time consuming, it is worthwhile in the sense that it allows unexpected categories emerge and involve the analyst in a very detailed examination of the data. It created intimate contact with the sentences and ideas contained in the transcription of the interviews.

**Searching for coherence**
To maintain consistency in the coding process, a codebook was elaborated following the model proposed by MacQueen, MacLellan, Kay and Milstein (1998) and also Muñoz (2005). This is especially important when, as in this case, multiple people are involved in the coding process, or if the coding process extends over a long period of time. The information contained for every code in the codebook (Table 5) included the name of the code, both short and long definitions of the code, indications of its use, and an example.

<table>
<thead>
<tr>
<th>Code:</th>
<th>(-) having time.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short definition:</td>
<td>No time to devote to the forest.</td>
</tr>
<tr>
<td>Long definition:</td>
<td>The person says that he or she has no time to devote to the forest.</td>
</tr>
<tr>
<td>Use:</td>
<td>When the interviewee clearly indicates that he or she has is no time to devote to the forest for many different reasons (work, priority, children, etc.).</td>
</tr>
<tr>
<td>When not use:</td>
<td>When the person says that he or she has little time.</td>
</tr>
</tbody>
</table>

Periodically retrieval of segments belonging to the same code was performed. Each of the segments retrieved were compared with each other to ensure that all of them have the same conceptual contents. The codebook is a “living” tool; it is recommended not to use a large number of codes at the same time, so codes from earlier stages of research were deleted (MacQueen, MacLellan et al. 1998).

**Coding strategy**

Two different coding strategies were carried out: the named open or initial coding and focused coding constitute the two main phases that require Grounded Theory coding work (Charmaz 2006). The first phase (initial coding) involved the naming of each word, line of segment of data. In this step, the main goal was to remain faithful to the data and be open to all possible theoretical directions indicated by the readings of the data. In the second phase (focus code), the most used or relevant initial codes were used to sort, synthesize and organize large amounts of data. Theoretical integration started in this step.

**Coding: an iterative process through conceptual thinking**

A segment-by-segment coding strategy was performed at the minimum meaningful unit of data (Figure 8). A strategy for codification based in Verd (2001) was used as a guideline for coding special situations, such as the described activities that were performed by other people than the interviewee, or future and past events, among others (Table 6). The result of this initial codification was a list of 365 codes. However, the total number of meaningful codes that an analyst can manage is limited, as MacQueen, MacLellan et al (1998) consider that only about 40 codes can be processed at once by a coder. Therefore, a process of code reduction was employed, and the system of coding that was developed was abandoned during the process of code reduction because, as the research became increasingly focused, the importance of the system of coding to the study decreased proportionately.
Approach, Methodology and Research Development

Figure 8: Example of segment-by-segment codification

Table 6: Strategy of codification for special events during the initial coding

Decisions were made regarding “problematic” issues in order to get a better understanding of the codification.

**Codification of the management practices**

Although no formal framework for codification was established before the analysis, a minimum framework for the “activities” becomes necessary after the first attempts of analysis, at least in relation to the 5 Ws (what, when, who, why and where). For this situation, and only for this, a tentative framework of codification was created. This framework was, however, an open scheme that made it possible to add new items or properties when the data from the interviews showed something that was not stated in the tentative framework. It was designed more to aid in the act of codifying than as a framework for analysis.

**Action/ descriptor/ description** cutting/when/winter

List of actions: Cutting, Shrub suppression, Thinning, Selling land, Selling cut wood, Buying land, and others will be added according to the interview content

Descriptors: what, where, who, when, why


Codes: [$grandparents/ac/cut/who/Wood dealer]

“The Wood…. What was feasible for them to do was… let’s say, cutting the pines by giving it to a dealer”

**Actions carried out by other people**

In most cases, the facts described are related in first person to the protagonist, the “ego.” However, in other cases, other actors appear in the narration whose roles cannot be neglected. These other actors are often individuals (father, neighbors, etc.), but they also include institutional actors who represent enterprises or government administration. The presence of these actors in the narration has been coded through adding the $ symbol at the beginning and the end of the actor’s name, such as: “$brother$.” When the facts are related to the ego, it hasn’t been given any special code.

Example:


Codes: [$grandparentsSac/cut/who/Wood dealer]

“The Wood…. What was feasible for them to do was… let’s say, cutting the pines by giving it to a dealer”

**Temporality**

Due to the wide temporal framework of the actions in the forest, and because the importance and relevance of the facts vary depending on whether they are temporary or constant, the information related to temporality has also been coded. The code has been included in brackets before the fact.
When the code relates to actual facts, no special codification mark has been included.

Code: (20 anys) ac/neteja {1-0}

P13: Merce Tanca.doc - 13:20 [Es va netejar una part de bosc..] (87:87) (Super)

Codes: [(20 years) ac/cleaning ]

A part of the forest was cleaned. But… maybe I’m talking of 20 years ago. 20 years… (think) 20 or more. A cleaning that got a subvention. But… in a little piece of the forest, eh? I don’t know how big exactly, but small. That let everything clean… and only the tight pins and that’s all. Apart from this, nothing else.

Absences
This term refers to absences or the non-existence of an action. In the interviews, references to absences are quite frequent, and they often influence the actions of the interview subjects (e.g., lack of money, lack of profitability). In addition, when regarding management practices, the significant absences are often as important as facts themselves (e.g., no management practices). These absences have been coded with a dash in parentheses in the right side (-).

Code: ac/explotació fusta(-) {1-0}

P 6: Pep despres memo codis.doc - 6:2 [no el volem ni com a explotaci..] (11:13) (Super)

Codes: [ac/Word exploitation(-)]

P: We don’t want it as an explotation at all, you already know it, we have this…. (doubt)
G: well, I don’t know it totally
P: No… the good part of the property is where there are the ruins of a house, that is what we want to use.

The hypothetical/conditional/willingness
In some cases, the interviewees describe things that they would do under certain circumstances. A typical example would be: “If I were rich… or If I had had information…or… I would like to…”

It was necessary to separate when the interview subject was talking about thoughts or actions that they refer to desires or hypothetical situations. These situations were coded with a “hyp” in parentheses in the left side, (hyp).

Example:

Codes: [(hyp)ac/vendre(-)]


Codes: [(hyp)ac/selling land(-)]

“We wouldn’t sell. We wouldn’t sell, never. Come on, we have gotten offers for a lot of money but… we are not interested; we would be more interested in giving it a future.”

The reduction of the number of codes was executed with two strategies. First, the codes were grouped into thematic and analytical groups and organized hierarchically; and second, a story line was selected and related codes were focused on. An example of this grouping is the aggregation of codes for designating activities, such as pruning, thinning, marking, cutting, etc. under a more generic code name. Another example of this type of aggregation is the grouping of codes such as “asking for grants,” “increasing benefits” and “selling land” into the more general analytical code, “strategies.”
Figure 9: List of codes after first sessions of open coding (in Catalan)

<table>
<thead>
<tr>
<th>Code</th>
<th>English Translation</th>
<th>English Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ac/amenutar</td>
<td>comer</td>
<td>bolets</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>la</td>
<td>bon preu</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>bosc-casa</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>casa demanada creixent</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>casa més important</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>casa restaurar amb diners</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>fusta</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>cobram entitat</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>comparant amb altres</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>competència entre</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>propietat</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>correu/ticnic</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>controla la propietat</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>demanda social</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>dreu a couleur</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>dret a negara de públic</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>fatalitzat</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>geste en</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>general/informació</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>general/pq/poc cost</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>informar veïns</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>informació acceptable</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>informació =&gt; meta</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>inversió</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>mitjana/temporal</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>mitjana/25</td>
</tr>
<tr>
<td>ac/amenutar</td>
<td>i</td>
<td>mitjana</td>
</tr>
</tbody>
</table>
The process was iterative and interactive. As the codes used were changing along with the research and the analytical and theory building process, the interviews were analyzed in small groups of 3-8 interviews per session. The codes were mainly “substantive,” rather than analytical in the sense that they conceptualized empirical data about forests and forestry.

The analysis of new interviews concludes with the addition to new codes and the deletion of old ones. At the point of maximum openness in the research process – just after conducting the first sessions of open coding – there was a list of approximately 200 codes (Figure 9), and that number of codes was reduced by means of combination, renaming and grouping (Glaser 1978). The organization of groups allowed for more conceptual work; for example, all of the codes related to activities where clustered in the same group (Table 7: Groups of substantive codes).

Afterwards, when analyzing new interviews, more theoretical codes emerged, which in turn conceptualized the way that the connections between substantive codes. The following example illustrate the process: During the coding process, all segments related to pruning were labeled with the code “pruning,” which was further categorized within the group “silvicultural activities.” However, when retrieving and analyzing the paragraphs about pruning of 10 different landowners, it was realized that there were different reasons for pruning and that different meaning was given to the same action. As a result, the segments related to pruning were classified as “improving the aesthetics” or “reducing load of fuel” among others. While he list of codes decreased and the new emerging codes were integrated in new categories and properties, formulating theories from a more conceptual level (Table 8).
Table 7: Groups of substantive codes

<table>
<thead>
<tr>
<th>THE PROPERTY</th>
<th>Selling the property</th>
<th>Silvicultural experience</th>
<th>Silvicultural tradition</th>
<th>Having time</th>
<th>Not having time to devote to the property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describing the favorite plot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describing the forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dirty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fragmentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fragmentation of the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of the forest in the set</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of the estate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediterranean conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Origin of the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Way of getting the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood productivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDENTIFICATION OF LANDOWNER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place of Birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place of living</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profession/job</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THE LANDOWNER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age when inheriting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buying the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duties with the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having information channels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having knowledge about forests</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heir definition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hobbies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implication of the family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inheriting the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning from the relatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managing the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTGMF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions out of the forestry activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bringing electricity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bringing water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction of water ponds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having it well</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintaining the patrimony</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruction of houses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism enterprise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SILVICULTURAL ACTIVITIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delimiting the boundaries of the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doing him/herself the work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oak treatments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pastures in the forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planting fast grow species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planting slow growth species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pruning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitary treatments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selling fuel wood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selling round wood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selling trees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shrub control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOUSES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Houses in the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living in the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living outside the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural tourism activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGRICULTURAL ACTIVITIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farming activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELATION WITH THE SOCIETY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mushroom pickers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No respect from people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People in the forest (visitors)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People living in the countryside</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public access to forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relation with visitors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social pride</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELATION WITH THE ADMINISTRATION/LAW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bureaucracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limitations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VALUES OF FOREST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aesthetic value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patrimonial value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social values</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECONOMY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expending money in forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expending time in forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses in the forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses out of forestry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Externalities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest productivity ($)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investing money in forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investing time in forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price of silvicultural works</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price of wood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profitability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPARING WITH THE PAST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(no) Changes in the price of wood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in the amount of people living in the forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in the amount of people visiting the forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in the number of forest fires</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in the price of manpower</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOREST FIRE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Nothing can be done&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowing infrastructure construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big forest fire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buying equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constructing own Infrastructures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damage reduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic impact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional impact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire in the area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire in the property</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire watching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member of an association</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piromans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk of forest fire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASSING INFORMATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration as source of information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighbors as source of information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No need for information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDEAS ABOUT THE FUTURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abandoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Fire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducing expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Using the coding paradigm (Strauss and Corbin 1990) and thinking in terms of causal conditions and strategies, it became clear that there were at least three different aspects to the act of pruning. Pruning is done to get better quality wood and to increase the profit of wood that is being sold; pruning was also carried out to help prevent forest fire, as the amount of possible fuel in the plot decreases; and finally, some landowners simply enjoy the aesthetic of a forest that has been pruned. Because of this realization, segments were re-coded, taking into considering this new conceptual perspective, and the labels “increasing income,” “decreasing risk” and “maintaining an aesthetic” were incorporated to the codebook.

Table 8: Relation between substantive codes and conceptual codes

<table>
<thead>
<tr>
<th>Substantive codes</th>
<th>Conceptual codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I’m just a link in the chain”</td>
<td>Having a moral norm</td>
</tr>
<tr>
<td>Trying to make the property grow.</td>
<td></td>
</tr>
<tr>
<td>I want it in good conditions.</td>
<td></td>
</tr>
<tr>
<td>I will never sell it.</td>
<td></td>
</tr>
<tr>
<td>Thinking in the descendents</td>
<td></td>
</tr>
<tr>
<td>The social weight of the moral norm.</td>
<td></td>
</tr>
<tr>
<td>(Re)creating a model</td>
<td>Dealing with a pre-set aesthetic model</td>
</tr>
<tr>
<td>I want it well and clear</td>
<td></td>
</tr>
<tr>
<td>Decadence</td>
<td></td>
</tr>
<tr>
<td>Vulnerability and abandonment</td>
<td></td>
</tr>
<tr>
<td>I like it as it was in my hometown</td>
<td></td>
</tr>
<tr>
<td>I like it as it was in the past</td>
<td></td>
</tr>
<tr>
<td>Working to be close to a model</td>
<td></td>
</tr>
<tr>
<td>Uncomfortability when it looks different</td>
<td></td>
</tr>
<tr>
<td>The fear of forest fires</td>
<td>Perceiving risk</td>
</tr>
<tr>
<td>Fear or forest fires</td>
<td></td>
</tr>
<tr>
<td>Economic impact</td>
<td></td>
</tr>
<tr>
<td>Emotional impact</td>
<td></td>
</tr>
<tr>
<td>Fire watching in summer</td>
<td></td>
</tr>
<tr>
<td>Factors influencing the risk</td>
<td></td>
</tr>
<tr>
<td>Sensitization</td>
<td></td>
</tr>
<tr>
<td>Big fires vs. Small fires</td>
<td></td>
</tr>
<tr>
<td>Managing risk</td>
<td>Capacity to control the environment</td>
</tr>
<tr>
<td>Manageable risk</td>
<td></td>
</tr>
<tr>
<td>Unmanageable risk</td>
<td></td>
</tr>
<tr>
<td>Views on the economics of forest (Forest does not provide)</td>
<td>Fitting in one’s economy</td>
</tr>
<tr>
<td>Forest as income</td>
<td></td>
</tr>
<tr>
<td>Forest as a reservoir</td>
<td></td>
</tr>
<tr>
<td>Forest as an expense</td>
<td></td>
</tr>
<tr>
<td>Strategies to help fitting the forest economy</td>
<td></td>
</tr>
</tbody>
</table>

5.5 Memoing

Theoretical memoing plays a major role in Grounded Theory. Memos are interim reports on analysis that help in the description of phenomena and also in the formulation of conceptual relation between factors. The two types of memos that were considered in this research are procedural and conceptual memos. Conceptual memos related to the emerging theory and the ideas that come from the analysis, while procedural memos related to steps taken or foreseen, or ideas about how to proceed with further theoretical sampling. Memos were written at any time during the coding and analysis sessions when a new idea relevant to the project came up. Both kinds of memos were stored in a database that’s content was the basis for the final analysis. Memos ranged in length from only a few sentences to several pages. To assist in the sorting process, all the memos were resumed, and uniformly assigned short abstracts were printed on a card and were subsequently sorted.
5.6 Sorting

Sorting refers to the way that ideas and concepts are organized and structured until a storyline is found. In the process of sorting, the theory emerges and the elements fit into the broader analysis. Sorting was a tentative, interactive and iterative process of organizing information and searching for a narrative that captured with the minimum number of elements the key factors of the research question.

As the concepts were previously described in memos, a way of structuring the ideas was sorting the concepts contained in memos. Classification and structuring of the memos encourages and simplifies analysis of the relationships between concepts as well as the further refinement of the conceptual categories. It also makes it possible to determine a hierarchical order and clustering of the conceptual categories (Charmaz 2006). There are not many references to the act of sorting in the literature of Grounded Theory that were referenced for this study. Following the example of Dick (Dick 2000), a very large table was used to sort and organize all of the different categories (Picture 3). Memos were drafted, written on cards and grouped on the basis of categories or properties related to categories addressed.

The groups of memos were arranged to reflect the relationships between categories, with the aim of capture the structure of the eventual report. Afterwards, the cards were gathered in the sequence that imparted the cards with a logical narrative. Diagrams as they were described in the previous section were also used to represent and store the various structures and layouts (Picture 3). In the search for the storyline of the final report, some categories that seemed important in the first memos were subordinated and lost importance, and at the end they were no longer key elements of the storyline. This was the case, for instance, with the category “transferring knowledge.” This category was developed at the first stages of the research and was described in a memo through the properties (according to who transferred the information, to whom, in what way, how, etc). However, several months later, during the sorting process, it was realized that was less important than others in explaining how forest owners understand their behavior. Therefore, the category was subordinated to others and by the end almost no reference to it appears in the final report.

Afterwards, the cards were gathered in the sequence that imparted the cards with a logical narrative. Diagrams as the described in the previous section were also used to represent and store the various structures and layouts (Picture 3).

Diagrams as a tool for sorting and aiding conceptual thinking

Charmaz (2006) strongly encourages the use of graphs and diagrams for organizing data, sorting and integrating memos. In method, memos are written during every stage of the research process (the data gathering, analysis and memo writing phases happen almost simultaneously), and they become the basis of the work. Once the memos are written, they have to be sorted to help form the structure of the theory. This process is a means of creating and refining theoretical links (Charmaz 2006 page 115 ), and it leads to the comparison of categories at an abstract level. The process involves sorting memos by category title, comparing categories, and considering how the order reflects the experience that is being studied. Additionally, consideration must be given to how the order fits both the studied experience and the logic of the categories. Finally, it is necessary to create the best possible balance between the studied experience, the categories and the theoretical statements that describe them
Memos were organized in many different ways and experimented with until the organization achieved an inherent logic, and then empirical data was incorporated to the framework. As Charmaz emphasized, when the researcher is working within a logical framework, sorting and integrating, memos tend to “fall into place.” The closer the sorting reflects the “depiction of the flow of the empirical evidence,” the smoother the process will seem (Charmaz 2006 page 116).

Diagrams and graphs provide concrete images of ideas and a visual representation of the categories and their relationships with one another. Some theorists consider diagramming to be an intrinsic part of Grounded Theory (Strauss 1987; Strauss and Corbin 1990; Clarke 2003; Charmaz 2006). In the course of this research, diagramming has taken different forms during the theorizing process. For example, the categories and their interrelationships were organized according to the “coding paradigm”: causal conditions, context, strategies, and consequences (Figure 10). Other examples of diagramming in this study include carrying out a propositional analysis according to what is said by the interviewees (Figure 11) and mapping the conceptual main idea and the intervening factors (Figure 12).
Figure 10: Example of graph used to group codes according to the "coding paradigm"
5.7 Theory formulation

Grounded Theory’s chief aim is to generate a theory from a field of incidents. According to Glaser and Strauss (1967), two different types of theories can be derived from Grounded Theory: Substantive Theory, which is the theory developed specifically for an area of work, and Formal Theory, which is a theory that is developed from substantive theories. Substantive Theory is a result of the systematic processing of the field data through processes of codification and categorization, whereas Formal theory is more abstract, and allows researchers to stray further from the substantive area of research.

The initial aim of this research study was to generate a Substantive Theory in the field of private forest owners in Catalonia. The formulated theory, in Grounded Theory can take the form of either a set of propositions or a narrative. It is most important to explain as comprehensively as possible and with a minimum number of concepts all the variation in the subject of the research. However, the results of this theorizing can be extended as a formal theory that applies to forest owners in a Mediterranean context.

5.8 Literature analysis

In many research projects, a review of existing literature on the topic is conducted in early stages of research as a first step to settling on the topic, identity, and research gaps, etc. Adherence to a Grounded Theory process of research calls for carrying out the literature review after the analysis, with aim of guarding against the importation of theoretical schemes and preconceived ideas into the current research.

Once the results description is completed, a literature review was done with the aim of:

1) Identifying other relevant works on forest owners and forest ownership
2) Connecting results with results found in other research projects
3) Finding connections to possible theories to be used in future research

ISI, Otusco and Scirus were the Web-based databases used to find and select relevant literature as the references quoted by other authors.

5.9 Computer assisted-qualitative data analysis software (CAQDAS)
The research process generates an important amount of textual data, which poses the challenge of storage and easy retrieval of the data for the researcher. Two different software for qualitative data analysis were used in this research: Atlas ti and Maxqda2 (Lucanus and Kuckartz 1995-2005; Software Development GmbH Scientific 2003-2006). An important difference between software that is designed for qualitative and quantitative research is that in qualitative research software does not formulate or provide any sort of analysis (Trinidad, Carrero et al. 2006). The aim of the software is to assist in the area of information management, which includes the storage of data as well as the organization and retrieval of coded segments. The remaining tasks, such as theory formulation, conceptualization, and coding are then done manually by the analyst.

The use of computer-assisted qualitative data analysis has been the source of an ongoing debate for the past three decades. The discourse, however, has evolved and moved on from its original objective in the 1980s of trying to convince potential users of its relative merits to discussions of the epistemological implications of using computers in the 1990s, to further discussions about the use of computers in empirical analysis or an evaluation of software tools in the 2000s (Cisneros 2006).

CAQDAS’s main contribution is the replacement of traditional tools of social scientists, such as scissors, colors, markers, Post-it notes, notes in the margins of the pages, photocopies, and the process of manually retrieving information (Trinidad, Carrero et al. 2006). As Gobo (Gobo 2005) notes, the use of software increases the precision and reliability of classification, and as a corollary, the rigor of an argument is improved, as computers guarantee data inspection, which, historically, was considered to be one of the shortcomings of qualitative research. On the contrary, other authors have cautioned that with the use of software researchers risk compromising creativity and intuition, and that as a result, analysis would become more quantitative than qualitative (Tesch 1990; Richards and Richards 1991; Weitzman and Miles 1995; Valles 1999). However, as Rodriguez et al. suggested, “the risks come from the attitude of the researcher more than from the computer” (Rodriguez, Gil et al. 1999), and most of these risks can be avoided if the researcher assumes a self-critical posture.

In the course of this research, the computer-assisted work was combined with alternative analytical devices that required turning off the program, such as graphs.

5.10 Assessing research integrity

According to O’Leary (2005), there are two areas in which it is particularly necessary to evaluate ethical boundaries and to consciously maintain a high standard of integrity. The first realm is in working with others, where the researcher has an ethical responsibility to ensure that the rights and the wellbeing of the study’s participants are protected at all times. The second area is in the production of knowledge, where it is the researcher’s responsibility to make sure that the “truth” has been captured, avoiding error and unrecognized bias. Both areas were considered in the present research.

Ethical considerations in the research stage

Some strategies were implemented to ensure that ethical standards were maintained, guaranteeing that research did not deal with illegal issues, and that we did not expect to encounter any revelation regarding activities that were against the law and that nothing was done to prevent illegal activity.

Regarding ethical issues in this study, a protocol was written and explained to every of the respondents. Informed consent of participating in the research was assured; a clear explanation of the research, aim and possible use of the results was given, and their voluntary involvement,
which was not coerced, was insured. No payment was given, although as thanks for their time and effort, a small present was offered to them at the end of the interview. Additionally, confidentiality and protection of the identity of all participants was promised. Therefore, the names of people and places have been omitted or changed in the transcriptions. Finally, the option to stop the recording was offered to the participants, as well as the option not to answer any question when they so chose.

Criteria for evaluating research.

The claim of validity in qualitative research is a key issue in assessing the integrity of research, and it can be a somewhat elusive and nebulous task because the criteria for evaluating research tends to vary according to the standards established within different disciplines (Miles and Huberman 1994; Thorne 2001). The search for relevant criteria and indicators for research is not free of ambiguity, as different authors and disciplines adhere to different standards in the way they conduct research (Bergman and Coxon 2005; O’Leary 2005; Charmaz 2006); therefore, “appropriate” indicators tend to be selected according to the paradigmatic understanding held by those doing the selecting (O’Leary 2005). In this regard, O’Leary (2005) suggests that while in quantitative and positivistic approaches the standard criteria for integrity and quality of the research are objectivity, reliability, validity, reproducibility and generalizability in qualitative research, the selected indicators are neutrality or subjectivity with transparency, dependability, authenticity, transferability, auditability (Table 9).

Table 9: Indicators of quality in research

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>QUANTITATIVE</th>
<th>QUALITATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjectivity management</td>
<td>Subjectivity</td>
<td>Neutrality/Subjectivity with transparency</td>
</tr>
<tr>
<td>Trust building</td>
<td>Validity</td>
<td>Authenticity</td>
</tr>
<tr>
<td>Methodological consistency</td>
<td>Reliability (ability to replicate)</td>
<td>Dependability (systematic, well documented)</td>
</tr>
<tr>
<td>Research accountability</td>
<td>Reproducibility</td>
<td>Auditability</td>
</tr>
<tr>
<td>Applicability of the findings</td>
<td>Generalizability</td>
<td>Transferability</td>
</tr>
</tbody>
</table>

Source: Adapted from O’Leary (2005)

Working definitions have been established for each indicator, to avoid any confusion of terms. “Subjectivity,” in this context, describes findings based on observable phenomena, whereas “neutrality/subjectivity with transparency” describes a type of subjectivity that is recognized, and a discussion of possible bias or subjective positioning is encouraged. “Validity” refers to concerns that involve an ascertainable truth value. “Authenticity” is a category in which multiple truths may exist; authenticity is assumed to be independent of the claims that researchers make about it. “Reliability” relates to internal consistency and the question of whether data results collected and measured or generated would be the same when subjected repeated trials. Similarly, “dependability” refers to a measure of reliability that cannot be achieved in social studies, however methods have to be systematic, well-documented and designed to account or control for bias. “Reproducibility” is the condition in which results would be supported if the same methodology would be used in a similar study; whereas the qualitative preference for conducting audits represents an acceptance of the intrinsic difficulty in reproducibility and seeks full explanation of methods to reveal to others how researchers reach the results and conclusions. The generalizability of quantitative research enables the researchers to compare sample results to those that are representative of a larger population; while “transferability” makes it possible to relate the findings of a sample to a greater truth or meaning that might be relevant to a larger population or group.
In order to meet the criteria and indicators of good research, some research strategies have been applied (Table 10). The research strategies in the following table provide techniques for fulfilling the particular set of criteria that is applicable. For several of the corresponding criteria and indicators there are several plausible research strategies.

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>INDICATOR</th>
<th>RESEARCH STRATEGY USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjectivity management</td>
<td>Neutrality/Subjectivity transparency</td>
<td>-Keeping track of the expressions used by the respondents and asking for their own explanations and meanings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Using techniques to increase the level of trust held by the respondents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Making the research process transparent by giving a detailed description of the research strategy and data analysis methods</td>
</tr>
<tr>
<td>Trust building</td>
<td>Authenticity</td>
<td>-Paying attention to the theoretical transparency and making explicit the theoretical stance from which the interpretation takes place</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Using standardized methods of writing field notes and preparing transcripts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Using the constant comparative method</td>
</tr>
<tr>
<td>Methodological</td>
<td>Dependability (systematic, well documented)</td>
<td>-Recording all the interviews, maintaining a database of transcriptions, and creating an elaborate code book</td>
</tr>
<tr>
<td>consistency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research accountability</td>
<td>Auditability</td>
<td></td>
</tr>
<tr>
<td>Applicability of the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>findings</td>
<td>Theoretical sampling</td>
<td></td>
</tr>
</tbody>
</table>

In addition to these research strategies, there are other methods for validating data; the two most commonly used methods in qualitative research are triangulation and respondent validation (Silverman 2006). Triangulation, which is the basic comparison of different kinds of data and methods to see if they corroborate another data set (in this case, the data that was obtained through observation), can be a useful strategy that adds rigor, complexity and richness to the study (Denzin and Lincoln 2000). On the other hand, respondent validation, or corroboration, refers to taking one’s findings back to the subjects that have been studied, and requesting their verification of the analysis.

There are different types of data triangulations that can be carried out (Denzin 1970): the first is a data triangulation that involves the convergence of multiple sources, and the second is methodological triangulation that involves the convergence of data from data collection sources – or investigator triangulation – using more than one researcher. The third type, theoretical triangulation, was used in this study (Trinidad, Carrero et al. 2006), in the sense that the same data has been analyzed from a descriptive perspective, an analytic perspective, and also an interpretative perspective. Every category that emerged at the interpretative perspective was checked from the descriptive and the analytic perspective, comparing it with the code book and the raw data.

Regarding corroboration, sending the results to interviewees can be difficult, as Abrams (1984) pointed out. This difficulty stems from the fact that in many cases the respondents are only willing to validate an analysis if it is compatible with the particular image that they have of
themselves and wish to portray. In addition, the language should be adapted to them before they are asked to corroborate. Because of these difficulties, respondent validation was not conducted. Nevertheless, the feedback from the respondents is considered very valuable for two reasons: in one sense, it will enhance the work and give it richness, probably unveiling new courses for further research, and in the other way, giving feedback it is considered an ethical issue. For these reasons, the process of corroboration will be done afterwards. Plans have been made to edit a version of the project oriented to the forest owners interviewed.
III RESULTS AND DISCUSSION

6. Results

6.1 The emerging theory: the multicriterial decision-making process of forest owners

Each forest owner is a unique individual with distinct personal characteristics and family. Each forest shares some common characteristics with Mediterranean forest and some that are indicative of how forest owners manage their land. Combining the context of the forest with that of the characteristics of forest owners, it is possible to understand different choices made by individuals based upon their perceptions of themselves, their family histories and circumstances, and the nature and conditions of the forests.

In order to simplify the wide variety of specific and personal examples, the results of this research study delimit four key factors that influence the behavior of every forest owner. By constructing ideal types of decision makers in regards to forest management, the interrelationships among these universal decision criteria become clear. This use of ideal type multi-criteria decision making typologies allows the interpretation of forest owners’ behaviors in terms of forest policy tools available to policy makers. The extent to which a policy tool can influence a forest owner decision is dependent on how any particular owner weights these criteria and formulate choices based upon available resources, personal believes, family expectations and economic situation.

There are four, often interrelated criteria that influence the perceptions and decision making processes of landowners in forested regions: the forest owner’s fulfillment of a moral norm, fitting a model or standard of forest management, the belief that risk of fire can be controlled with silvicultural management, and the need to conform the needs of the forest to the forest owner’s financial situation. Decisions are not made on the basis of only one of these factors; instead, willingness to participate in forest management more often generates from a unique combination of these four variables. Every one of the factors will be developed in following sections:

Fulfilling a moral norm

There exists a tacit moral obligation in the sense that the forest, as part of the patrimonial legacy, must be cared for and maintained. This moral norm bears a likeness to the intergenerational relationship between parents and children, but it also, in some cases, has to do with personal beliefs concerning the natural word and one’s responsibility to environmental conservation. This moral norm is extremely strong in some cases, and in others it is weak or non-existent. Believing and following this moral norm favors forest owners that engage in forest management

Having an archetype to fit

In the mind of the forest owner there is a model, a standard indicating how a good forest should look. There is no single, ubiquitous model that is common to all landowners; rather, every person can have a personal model. This model is strongly influenced by the landscape that is familiar to a particular landowner, the forests visited during one’s childhood, and also the education one receives in respect to forestry. People that are raised in the familiar type of forest environment tend to view that particular type of forest as the way a forest should look. Therefore, it is typical for forest owners to continue the forest management practices of their parents or wherever they have spent the most amount of time. Owning a forest that is far
different from that set archetype can cause feelings of discomfort. Having an archetype to fit increases the possibilities that the forest owner engages in forest management.

**Reducing risk of forest fire through management**

The belief that forest management makes forests less vulnerable to forest fires (or at least that it decreases the damage caused by fire) leads implicitly to the contrary idea: A forest that is not managed is more susceptible to fire. Forest owners subscribe to this logic to different degrees; some landowners discriminate between small forest fires that can be controlled through silviculture and larger forest fires. Depending on and individual view of the relation between management and the damage caused by forest fires, landowners will be eager to manage or not. will be more or less likely to manage the forest.

**Fitting one’s economy**

Forest management must conform to the financial situation of the landowner, and its implementation can take different forms. This could mean reaping high profit margins from a small plot of land, or, on the other hand, it could mean low profitability per hectare on a much larger scale; or it could simply mean that the amount of capital committed is within reason based on the other financial responsibilities of the forest owner. This is a personal perception of how forest-related activities related fit one’s personal finances.

The decision of whether or not to engage in forest management is generally based on several of the four factors, and often all of them. An amoeba graph could help to visually represent the concept. This kind of graph has radial axes and changes are represented in the values in relation to a central point.

For explanatory purposes, we will imagine four different forest owners: Mrs. A, Mr. B, Mr. C, and Mrs. D, each of whom have been given a survey requesting that they indicate on a scale of one to five (one representing the minimum and five the maximum) their own fulfillment of the various criteria for forest management decision making. For example, if a forest owner understands his property to fulfill a certain model or believes that forest management fulfills some sort of moral norm, it is possible that that person will engage in forest management. If, in addition, that forest owner believes that forest management increases the security of the property and it is within his or her economic means, the chances of the person engaging in forest management are significantly augmented.

Ultimately, if a forest owner’s fulfillment of one of the factors is weak, the probability of engaging in forest management becomes slighter. For instance, if one is incapable of devoting money to manage the forest and thinks that it has little influence on forest fire prevention, the overall likelihood that that forest owner will decide to manage his or her forest is significantly diminished. If, in addition, the forest manager believes there to be no moral norm linking forest management to upholding the patrimony, the probability that this person will engage in forest management is further diminished.

For our purposes, we will assume that every person is able to assign value to the four criteria according to his or her personal views. In the case of Mrs. A (Figure 13), the landowner has a well-formed concept of how a forest ought to look and she also has a productive approach to the forest (although she does not make her living from the forest, it represents an important source of income). Furthermore, she inherited the property and feels that caring for the forest is a debt that she owes to her ancestors, and she is also convinced that controlling shrubs and thinning the forest decreases the risk of forest fire. This person is likely to engage in forest management and make active decisions concerning the property.
Results and Discussion

If a forest owner seeks to start another career that is more profitable than forest ownership (Figure 14), it is less likely that forest management will figure into his or her personal economy.

In the case of Mr. B, he has a concept of how the forest looked when he was young, and he is certain that controlling the shrubs reduces the risk of damage caused by small fires. He would also like to leave the property in good condition for his children, if it is at all possible. His problem is money; he gains no income from the forest, and he has to devote his time in other tasks in the farm that are more profitable. The situation is similar to that of Mrs. A, but in Mr. B’s case, management is less compatible with the economic situation of his family, thus decreasing the likelihood that they will devote resources to forest management.
Results and Discussion

Figure 15: Driving forces on prototypical forest owner Mr B

Miss C, the third example (Figure 16), inherited the family property two years ago, after the death of an old cousin of her mother. She has a great deal of material wealth and has made expensive arrangements in the house and in the immediate surroundings. Concerned about forest fire, however, she bought a two-cubic-meter reservoir and placed it close to the house for fire suppression purposes. Believing that the risk of forest fire cannot be reduced through management, she has no model of how the forest should be (she was not prepared to be the forest manager).

Figure 16: Driving forces on prototypical forest owner Miss C

In the fourth case (Figure 17), Mrs. D inherited the house from her father, and she is very worried about forest fires, believing that “if forests are dirty,” there is a high risk of forest fire. Because the forest does not produce any profit, she would have to spend money on it, but it would be possible for her to do so without making a terrific sacrifice.
Many other combinations of these four variables can be made. The bigger the blue in the graph is, the greater the possibility that is that that person will engage in forest management of some sort. Alternately, the smaller the area is, the less likely it is that owners will manage their forests.

There are several factors or conditions that influence forest owners’ perception of the driving forces. Table 11 shows some of the most salient examples:

<table>
<thead>
<tr>
<th>Positive influence</th>
<th>Negative influence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fulfilling a moral norm</strong></td>
<td><strong>Buying the property for economic purposes (there is a house, for instance)</strong></td>
</tr>
<tr>
<td>• Inheritance</td>
<td>• Property that belongs to many people that do not share common goals</td>
</tr>
<tr>
<td>• Having children to pass the property onto in the future</td>
<td></td>
</tr>
<tr>
<td>• Sense of social responsibility and pride</td>
<td></td>
</tr>
<tr>
<td><strong>Having an archetype to fit</strong></td>
<td><strong>To be born in another area</strong></td>
</tr>
<tr>
<td>• Having a model of the property or the region</td>
<td>• To have had no previous contact with this type of forest</td>
</tr>
<tr>
<td>• Having a model through farming education</td>
<td></td>
</tr>
<tr>
<td>• Having technical assistance, public or private</td>
<td></td>
</tr>
<tr>
<td><strong>Reducing risk of forest fire</strong></td>
<td><strong>The belief that forest management will make no difference because the forest will burn either way</strong></td>
</tr>
<tr>
<td>• The belief that there are big and small forest fires</td>
<td>• The belief that methods of fire suppression are the only useful techniques</td>
</tr>
<tr>
<td>• The belief that risk can reduce if forest is managed</td>
<td></td>
</tr>
<tr>
<td>• The belief that damages will be lower if the forest is managed</td>
<td></td>
</tr>
<tr>
<td><strong>Fitting one's economy</strong></td>
<td><strong>Other important expenses that compete with the forest</strong></td>
</tr>
<tr>
<td>• To make one's living from forest.</td>
<td>• The inability to afford forest expenses</td>
</tr>
<tr>
<td>• To profit from the forest</td>
<td>• Expected changes in land use (e.g. building pressure)</td>
</tr>
<tr>
<td>• To be able to spend money on the forest</td>
<td></td>
</tr>
</tbody>
</table>

Most of the policy tools that are used to encourage forest management are basically oriented towards only the economic axis of the criteria matrix. Within this, economic incentives can only
work if the landowner understands the expense of silvicultural work as an investment towards the future. Turning again to the graph, as it was noted earlier, Mr. B’s forest management does not fit with his economic situation. With grants, he can improve his finances and invest more in forest management (Figure 18).

![Figure 18: Driving forces on prototypical forest owner Mr B simulating the use of an economic forest policy tool](image1)

However, in comparison, a grant would not help Miss C (Figure 19) because the economic axis is not improved when a grant is introduced. For her, forest management is similarly unlikely, with or without a grant (recall that her financial circumstances were very comfortable). In this example, action can be taken in other areas of the criteria matrix, such as assistance in creating a model, constructing and fulfilling a moral norm, and developing an understanding of various risk factors.

![Figure 19: Driving forces on prototypical forest owner Miss C simulating the use of an economic forest policy tool](image2)

Observing Miss C again, we could assume that, for example, a demonstrative project in the area might show and explain to her that a forest is healthy when most of the trees have thick trunks,
and that project would, in effect, provide a model for her that explains how a forest ought to look. If her forest doesn’t look similar to that of the model, she will probably feel that something could be done to bring the state of her forest closer to the model forest. If the forest already fits the model, she would probably be inclined to think about preserving the present state of the forest so that it continues to resemble the model (Figure 20). In both cases, the subject would be more likely to perform some sort of forest management.

Figure 20: Driving forces on prototypical forest owner Miss C simulating the use of an informational forest policy tool.

The four factors or driving forces will be analyzed and described in the following sections.

6.2 “I want my forest to be good”: The fulfillment of a moral rule and the search for an archetype

6.2.1 “I want the forest to be good”

Most of the landowners interviewed shared the common wish of keeping their forests “good.” This section will examine the various ways in which forest owners define and explain this concept of forest “goodness,” what meaning it has, and how a “good” forest is supposed to look.

Several expressions that are close in meaning to “good” have been used by the forest owners. Expressions such as “well cared for,” “healthy,” and “conserved” express the necessity to interfere with the forest in order to protect it, whereas other expressions, such as, “in good condition” or “as God orders” underscore the belief that forest conditions must adhere to a certain established standard. Table 12 summarizes and gives a survey of the main expressions that are commonly used to describe the “good” state of the forest.

---


Well: 1) According to what you could wish for, satisfactorily, profitably, happily. 2) In a good way, correctly, especially in line with one’s obligations. A piece well sewn. They have behaved well.

Clean: Without stains, dirt or anything that makes ugly, corrupts, clouds the purity of, etc. You hands are still not clean. Clear and clean water. A sky clean of clouds.

11 The expression most commonly used is pretty close to “good” in English. Good have implicit an aesthetic archetype and healthy condition.
Table 12: Expressions close to the concept “good” found during the interviews and their translation into English.

<table>
<thead>
<tr>
<th>Expressions close to the meaning of “good” (in Catalan)</th>
<th>Translation into English</th>
</tr>
</thead>
<tbody>
<tr>
<td>En condicions</td>
<td>In good condition/healthy</td>
</tr>
<tr>
<td>Tenir-ho decent</td>
<td>To keep it decent/tidy</td>
</tr>
<tr>
<td>Com Déu mana</td>
<td>As God orders or The way it’s meant to be</td>
</tr>
<tr>
<td>Mantinguda</td>
<td>Maintained</td>
</tr>
<tr>
<td>Conserved</td>
<td>Conserved</td>
</tr>
<tr>
<td>Cuidat</td>
<td>Well cared for</td>
</tr>
</tbody>
</table>

From the interviews, we can distinguish two groups, each with a different meaning for the concept of forest “goodness”\(^13\). On the one hand, forest owners describe a condition that is close to an established or standard archetype of “goodness”. On the other hand, “to be good” connotes the fulfillment of a moral or social norm that can be summarized as: “The patrimony must be bequeathed from parents to sons” and “The patrimony must be bequeathed in better condition than when it was inherited.”

6.2.2 Goodness as a measure of proximity to an archetype

The desire for the forest to remain clean and well-kept often draws forest owners to an existing archetype of what the forest should resemble or a model of what silvicultural management ought to be. The explanations provided by the forest owners suggest that one’s concept of a good forest is developed during childhood. For most of them, this archetype is formed unconsciously and involuntarily. Joan expressed his way of knowing that silvicultural treatment was obviously necessary in his forest by simply looking at it. When asked how he learned this technique, he responded, “This is the farmer way of being,” expressing how ingrained this type of knowledge is.

Other forest owners described how forest management was taught to them by their fathers. One job that stands out in the interviews as a task that exemplifies the process of learning forest management is the marking of trees:\(^14\)

“As they had been to mark pines with my father, well they showed me the system that we used at home.”\(^15\)

In this other example, Martí a forest owner from the central region of Catalonia explains how she learned from her father by going to the forest with him.

“That... you learn by going there. My father liked the forest a lot, too. And when I was small, when he came, I always went with him”.\(^16\)

\(^{12}\) The world patrimony has been selected for the translation because is closer to the original. The meaning is close to “heritage”, “land inheritance” and also “wealth”.

\(^{13}\) Goodness in this context means the characteristic of relationship between the forest conditions and social perception.

\(^{14}\) Marking means selecting (and putting a mark on them as a signal) the trees to be cut. This action is very important because it includes the decision about the weight of the cutting and the selection of the trees for the future, and it influences very much in the appearance of the forest.

\(^{15}\) PV 126 (Letters are the code designating the interviewee-Table 16- the number is the paragraph number of the excerpt)

\(^{16}\) JV 68
The forest landscape that forest owners were familiar with in their youth has a significant influence on current perceptions of the forest. Therefore, in families where forest property has been passed down from one generation to the next, the current forest owner accepts as an archetype the image of the forest as it was when his father shared with him or her the knowledge of management. Today, forest owners try to preserve the forest in the image of how it was inherited.

Nevertheless, not all the forest owners have inherited their lands, and similarly, not all forest owners have grown up in their property. When a forest owner that has a preconceived personal archetype moves to a different region, they will usually maintain a mental image of the original archetype. In many interviews forest owners discuss the forests in other areas as “nicer” or “better” and develop a sort of nostalgia about them.

**Nostalgia for the home land forest**

The following fragments illustrate the experiences of forest owners who are not living in the area where they grew up. All of these forest owners have different properties from those where they lived, grew up or that were managed by their family.

Enric is a young owner around the age of 30. His family owned forest property in a region that was flooded in the early 1990s during the construction of a dam. The family subsequently relocated to a different area 60 kilometers away, and 17 years after moving, Enric revealed that he preferred the landscape of the first property: “It was different. This one is OK, but the other one was really good.”

Clara is a part-time farmer on her 40s. Her family owned a small forest property where they kept a herd of goats. When she married, she moved away to live on her husband’s property 10 km away. Instead of goats, her husband had cows; they now keep cattle that graze in the forest, but Clara admits she still prefers how the forest looked when goats were grazing instead of cows. “I don’t like how forest looks after the cows…they squash the little trees… with the goats it doesn’t look like this.”

Esther works as a secretary in the city, although she lives in a house in the countryside, in the middle of the forests. She explains that her mother grew up in a forest property near Barcelona, and that she moved away to the house of her husband, another forest owner who lived 70 kilometers away. There, at the new home, Esther rarely goes out for a walk in the forest on her actual property, although she does so when she goes to visit her parents at the property where she grew up. She feels uncomfortable in unfamiliar forests.

Forest owners from these examples show a sort of nostalgia for their old forests. Other landowners, when moving, tend to import the model or the archetype in a more active way. Some forest owners that have emigrated from other regions and who may have learned to manage other types of forests tend to continue employing the practices that they learned elsewhere. Therefore, the techniques that they have adopted may or may not apply to the forests that they currently own and manage.

Oscar, for example, started managing his property when he married his wife, who was the forest owner. Coming from a region 150 kilometers away, where poplars were mainly cultivated, Mercè’s silvicultural background and experiences are far different than what he encounters on his wife’s property. Although during the interview he expressed satisfaction for

---

17 JP 46
18 LA147
19 JG
20 AM
the way his forest was cut, how it looked, and his great confidence in his wood dealer, he is strongly criticized by his neighbors who say he cuts his forest excessively.

Up to now we have explored expressions of differences between the archetypical forest of some landowners and their real forests when they move from one geographical region to another; the environment changes because the individual has changed his or her place of residence. However, sometimes moving to a different geographical region is not necessary for an environmental change to occur – forests in many places do not look as they did in the past.

**Nostalgia for past forests**

There is a significant cultural component to keeping the forest “clean and good,” which is why forest owners prefer familiar landscapes “the way they were,” and they also associate the growth of ground vegetation, which is an unfamiliar sight to many forest owners, with increased vulnerability to fire. Even if the forest owners are not conscious of its influence on their judgment, the preference for familiar landscapes is raised in many of the interviews.

Similarly, to the forest owners that grew up in other places prefer those landscapes over the land that they own and manage, and they often feel more of a connection to the landscapes that they knew in their youth, preferring familiar landscapes and rejecting unfamiliar ones. None of the interviewed forest owners expressed a preference for forests in their present conditions when compared with their past appearance and condition (“It used to be cleaner”).

Different reasons have led to the change in forest appearances, but the most important have been (according to the forest owners interviews and also to the official statistics) the decrease in firewood use because of increased use of butane gas as fuel for kitchens and heating since the 1960s, and the fall in prices wood. Together, with an increase in the price of the manpower, these factors have lead to the under-exploitation of forests.

The central factor in the construction of a preferred forest model is the existence of this archetype, which depends on a sense of nostalgia more than it corresponds to the image of a forest according to a productive model or criteria relating to biodiversity. Most of the interviewed people think that forests are “good” when they look as they did in the past instead of thinking that the forest is “good” when the forest is managed in a productive way or has a high level of biological diversity.

**Modifying the archetype**

From these examples it is clear that archetypes are very personal and they are rooted in previous formative experiences. An interesting case is the creation or the modification of this archetype by means of the training. Some people that have a fixed archetype that was formed from what they experienced at home during their upbringing later take forest training programs, and as a result, they are left with two different archetypes. The interviews suggest that forest managers negotiate the two archetypes, but that they have a tendency to favor the techniques they learned at home.

However, the degree to which new information and knowledge is integrated into the actual management of forest property varies. When the property is family run, it depends in each case on the role the person takes in the decision making process in the property. Therefore, the question of whether formally taught silvicultural techniques versus traditional methods will be

---

21 E.g. JF, FF, PV
implemented is largely contingent on whether the individual’s opinions are highly valued, taken into account, or mostly ignored.

The following passage illustrates the tension between innovation and tradition that is negotiated by many forest owners. In this case, Sandra, who is a forest engineer, and her grandfather manage a forest property together. They make joint decisions about the forest by consensus, and here she describes how she tries to convince her grandfather of the rationality of her ideas “I think I’ve made him see it.” In the second part of the paragraph, she mentions that she let him do many things, but “not everything.”

“the view of this of opening to regenerate, I think I’ve made him see it. Because we’ve got a bit of land that he said, ‘Oh, that, that we’ve opened it up a lot, haven’t we?’ And I said to him, ‘There, nothing’ll grow there!’ And the years have gone by and nothing has grown. What I’m saying is, it’s also a bit of... keeping your eyes on things (...) Yes, he’s let me get on with it... (laughs). Not everything, though...”

The opposite case is shown in this excerpt, where Pere, a forest owner and a farmer, who learned everything working in his property, explains that education is not necessary to manage forests, attempting to discredit the university’s role in teaching forest management.

“Get on with it! If, not... Well, look, in general there’s always farmers’ work... If you like it, they don’t need to teach you all that much, do they? It’s experience that teaches you.”

In the course of this research, two different strategies have emerged that are adopted by forest owners who do not have an acquired archetype, and therefore do not know from experience how a forest should be managed: either they trust in what the experts say, or, having reached an impasse, they do nothing at all because they do not know what to do. To trust the experts is a tacit admission on the part of the forest owner that they lack either an archetype or knowledge, and that they therefore must trust somebody other than themselves.” And especially, later, be aware of your limits, that there are people who know more than you.

Next excerpt illustrates how having access to knowledge is important in order to be able to carry out silvicultural activities. This forest owner bought the property few years ago and he has almost no experience in forest management. His wife works in a company related to forest and he asked his wife colleagues for advice.

“Here if it hadn’t been that Sandra (his wife) worked in one place and me in another, and if we had no idea perhaps it wouldn’t even have been cleaned, do you get my idea? What I mean is that perhaps I wouldn’t even have done the management plan. But out of ignorance, you understand. For pure lack of knowledge. That perhaps is also one of the things that mean that the people don’t do it at times. Lack of knowledge. I don’t know if there is enough information about that. I suppose if I was a big forest owner and for a long time, I’d know it”
Even if the archetype comes from another region, from another time, or from a new source of knowledge, the archetype becomes a measure of the “goodness” of the forest, and straying far from the archetype can cause feelings of discomfort.

6.2.3 Goodness as a moral rule

The other meaning of keeping the forest property “good” are guided by a moral rule, which is derived from intergenerational inheritance. Many forest owners follow the internal rule of not selling the family property, as if there were an obligation to bequeath the forest to their children as their parents did to them. A second unspoken rule says that the patrimony must be conserved and passed to the heirs in the best possible condition. As a result of this moral norm, forest management is carried out by many forest owners as an obligation, both to the family and to the larger society, so that the forests remain “good,” “well conserved,” and “in good conditions.”

The following excerpt illustrates the idea that it is necessary to take care of the patrimony. This forest owner speaks of having a “clear conscience”:

“It’s not enough just to have property, you’ve got to have it more or less in good conditions... and to have a better conscience then that you’ve got something, you’ve got to keep it in conditions.”

Forest owners who have purchased their property develop a similar manner of thought. The forest owner who bought his property in the following example discusses his moral obligation to take care of the forest and his feeling of obligation, which is, in this case, an obligation only to future generations.

“And the forest, for example, for me, one of the things I like most is that I’ve still got a moral obligation to look after it, and what I don’t know to do is not take care of it. For me it’s like an allotment. It’s a self-obligation. And with the forest activity, there’s a thing that if you think about it properly it teaches you to be very humble because you’re part of a chain that’s over a hundred years long. What I mean is that, you take advantage of what they’ve done, and well – because there are things I’ve done that I won’t see until sixty year’s time -, but one thing is self pride... That is, you realize that you’re a link in the chain of nature”.

In cases where property has been passed down for centuries, the inheritance is highly valued and inspires great pride. The prospect of selling such property is remote (unless its owners are forced to). In addition, great significance is given to the act of bequeathing the property to one’s children so that it remains in the family. The following fragment articulates the situation. Andreu explains how he could sell the property he bought, if it were necessary, but not those that he inherited.

“Hey, no! I think... let’s see, it’s a very romantic idea but... I could sell something I myself had bought, but something you inherit, that belongs to your family, if they’ve given it to you, I think you’ve got the moral obligation to be able to hand it down to your children. Let’s see, you never know what the future holds, do you?”

These social ties between heirs are so strong that, in addition to maintaining a sense of “pride,” there is also a sense of social “disgrace” or “shame” if someone squanders the inheritance. In the following segment Marcel, a forest owner from a family with long tradition, illustrates the

30 AS 140
31 AB 144-148
32 JO 42
social shame of squandering the inheritance, and a specific name is reserved for the heir who doesn’t follow the rule.

“There was the figure of the “wasteful heir”, who frittered away the family wealth. And that was a social and family disgrace because he was failing in his duty to protect the family possessions. It is offensive in the strict sense of the figure of the heir.”

The idea of selling the inherited property is considered a sort of desecration: “the property, the patrimony has to grow, not shrink,” whereas forest owners feel at liberty to sell property that has been purchased, if it is necessary. To demonstrate this attitude, Santi describes the emotional pain experienced by farmers that are forced to sell their land, comparing it to physical pain and loss.

“Look, for me, what is the family estate, I would feel really bad if I had to... to sell it. But buying bits around here..., like we’ve done, well, if you have to sell a bit, you sell it and that’s that. But... for me, that of going to sell it. I always say the same: we farmers are a special race. No... every time you have to sell, it hurts you... they take a piece of... like if we said a piece of guts? The same.”

Similar to this analogy between selling the property and losing a part of the body, is the designating of the forest land as the family property and the management unit as the “home.” Therefore, they use the expression “home” to designate the property (“at home we do it this way”), regardless of whether there is a house on the property, and whether or not it is occupied.

“in our house we alternated this forest exploitation with a bit of dry-land farming.”

“I have seen people who have stopped on our land, and who have made lunch, and have even stayed overnight, they light fires in the middle of summer.”

“Well... on our land, what was most appreciated, was the north face, that was where there were the hundred-year old pines and... But hundred-year-old, really hundred-year-old ones?”

“I would be in my rights to fence in the forest and stop anyone from coming onto my land...”

In a similar manner, the word “home” is used to describe the familiar unit, the command post from which decisions are made. This forest owner recalls that the managers of her property were confused by the question of what silviculture really is. “My house,” in this usage, is used to designate the decision makers in regards to the forest.

“I think that... in our house they thought they were doing selective cuts, and in fact, what they were doing was thinning.”

---

33 ER 153  
34 AS 29  
35 E.g IG, ER, JR, PA, AB, PV, AL, XC  
36 PV 353  
37 CI 6  
38 DR 176  
39 TB 8  
40 PA 110  
41 LC 26
Forest owners who have not inherited their property, but have instead purchased it, generally feel free to sell it\textsuperscript{42} even when the pervading wisdom dictates that it is better to hold onto the land and allow it to appreciate in value.

The second rule mentioned – the social rule – refers to the idea that wealth must be preserved and bequeathed in the best possible condition. By this standard, it is not enough to simply maintain the property; its value must increase. The property is passed down from parents to children,\textsuperscript{43} and its possessor must make pains to improve it in order to continue the tradition of inheritance.

Arnau, a forest owner who belongs to a family with long tradition in forest management, explains that for many years it was impressed upon children that it was their duty “to serve” the family’s wealth. In his opinion, the strong tradition about the responsibility to one’s heirs helped to maintain the social structure and institutions of the country. To reinforce this attitude, civil laws were passed that mandated the maintenance of wealth. Catalan civil law granted forest owners the right to hand over 75 percent of their wealth to a unique heir, and the distribution of the remaining 25 percent was left to the rest of legal heirs.

Arnau also explains that this 25 percent of the entire patrimony could be left to a unique heir, according to the civil code -represents the percentage that one person could contribute to make the property improve during his life. Thus, this improvement of at least 25 percent of the value of the inherited property was considered a sort of objective and a moral duty by many forest owners. The following text illustrates this fact in Arnau’s words:

\textit{I don’t care how much it’s worth! It’s me who has to maintain it, at least by maintaining I am earning it, capitalising it, making it better (\ldots)\textsuperscript{44} For a long time, it was essential for the country to maintain patrimony, so the people were taught to do that, that they were there to look after their patrimony. (\ldots) It was considered that the heir could have 25 percent of the patrimony for the improvements that he had done. (The rest is the part he will have to bequeath to his heir.)}\

In the interviews there are more examples of the idea that the forest owner is only a temporary manager and that he must watch over the patrimony, which illustrates that people had the obligation to serve the patrimony. The patrimony (inheritance, wealth, property) was not seen as a means of achieving personal objectives.

\textit{We have kept up the system of the heir, it’s the sense of being the heir, the manager for a period, with the obligation to look after that property, that patrimony, but with being its lord and master. (\ldots) I’ve never felt like calling myself the owner in the sense of having the property at my disposal, but yes… to improve it. What I want to say is that not to say that that it is mine.. I’m the lord and master; I’m the owner and I do what I want with it, not that, no.}\textsuperscript{45}

The following segment reinforces, as many other segments from the interviews do, the idea that the heir has the obligation to take care of what has been inherited.

\textsuperscript{42} E.g. AB, PA, BR, JG, EV, JM
\textsuperscript{43} L’hereu: Only one person inherit the property, the rest of the sons and daughters get a sort of compensation, but not a part of the property.
\textsuperscript{44} JR 147
\textsuperscript{45} JR 48
“the land, well it’s, it’s... what you’ve got to look after, what you’ve inherited, and... well you’ve got to take care of it”...46

### Diminishing the moral norm

The moral norm of keeping the patrimony is very strong, but the traditional laws of inheritance are changing. Democracy and equality are deeply rooted in modern society, and as a result, people give greater value to personal values and equality among brothers of the same family than to property or material wealth maintenance. The massive exodus from rural areas to urban metropolitan centers has also prompted changes to the system of values on both the individual and societal level. In some cases, the tradition of passing all of one’s property on to an individual recipient has fallen out of favor.

Gemma, a forest owner, with a property near Barcelona, is part of a family that has lived in Barcelona for three generations. She owns a forest property that was passed down from her grandfather to her father and her uncle. She, her brother and the two children of her uncle were designated usufructuaries, and, given the distribution of power, any decision that is made involves at least six people. It is notable from the segment that she refers to the system of inheritance as ancient, something that is no longer practiced in the city.

“...My grandmother also died and at that moment everything was left here... (silence)...Because this property was inherited by my father and my uncle, split between them, and then my cousins, my brother and I became usufructuaries.

Q: And then, the inheritance transfer in the heir tradition was not practiced?

No, because this was—this is an ancient tradition, the heir tradition... in the city it isn’t done like that. No, here they did that of... what you should never do, of dividing something into two, didn’t they? and... Then here was when they tried top sell it and couldn’t...

Q: And you, how do you live with that?

The thing is that I can’t do anything about it... Because if... if it were me, for example, me and my brother or if it was my father or whatever, then it’s easier to talk about it, but then, as my uncle is in there too, and one wants one thing and the other, another..

(....)

When there’s something that come to belong to more than one it gets really complicated, doesn’t it? and... and... I don’t know. Especially because there are different interests,

(....)

... and when something is inherited by one, well he can more or less decide, if it’s inherited by two then, no? It’s like someone who has five children and... it’s inherited by all five. What happens? A thing becomes something that belongs to all five... Then if one dies, it goes to his children, the two of them, than it belongs to seven... But if one has 20, the other 10, the other whatever... Then that’s a real mes” 47

Some forest owners living in the city and embracing a modern lifestyle have problems with maintaining ancient traditions at the same time. They find it difficult to keep principles of equality, while at the same time protecting the unity of the property. To negotiate the changes brought on by modernity, families and forest owners are required to change the way they approach the concepts of property and inheritance in order to retain their property, while at the

---

46 CI 58
47 EV 68-75
same time granting the heirs co-ownership and equality. In some cases, the property belongs to one person but is managed by all the family members, and the profits and expenses are shared. This sort of shared venture is most successful when the most important of the property’s assets are the crops rather than the forests.

For some families that are in the process of transitioning from tradition to modernity\textsuperscript{48} it is uncertain whether one person will be designated as the sole heir, or if the property will be shared among all of the possible legal heirs. Potential heirs in this situation pointed out the tendency to avoid discussing death and the distribution of wealth and property, a topic of conversation that has become \textit{taboo}\textsuperscript{49} in family conversations. Because the theme is repressed it causes confusion among the field of possible heirs, and for years they are uncertain of their role in the decision-making process. Some fear that their actions in respect to the property can be misinterpreted by the other possible heirs, who might view them as rivals. In this climate of uncertainty, many possible heirs deny their link with the forest and find other sources of income, which leads to discourage other family members from misunderstanding their motives. If questioned about inheriting the family property, a person in this sort of uncertain situation might typically respond in this manner: “\textit{Not any more. Now I’ve orientated my life towards other activities. I just wouldn’t have time to dedicate myself to it now}.”\textsuperscript{50}

Although the challenges caused by the modernization of the society, the moral norm regarding keeping and improving the property seems to be an important driving force in making decisions about one’s property. Together, with the concepts of keeping the forest close to a particular archetype, the moral norm is one of the most important motivations for forest owners to keep the forest in “\textit{good condition}.” The next section will describe and analyze how a “\textit{good}” forest looks.

\subsection*{6.2.4 Constructing forest “goodness”}

Forest owners that discussed the “\textit{goodness}” of the forest generally referred one of two conditions. The majority of forest owners equate this concept of “\textit{goodness}” with a forest that is thoroughly thinned and cleared of shrubbery, but there are also other forest owners that associate forest “\textit{goodness}” with both the silvicultural conditions and the overall wealth of the property.

The clean forest
Forest “\textit{goodness}” is often associated with the thinning of ground vegetation and other similar preventative measures. The phrase, “\textit{to be clean and good},” which is a direct translation from Catalan and does not carry the same connotation in English, is an expression dependent upon both terms. Most of the forest owners in the interviews that used the term “\textit{good}” did so in the same paragraph that they also used the word “\textit{clean}.” In this context, the concept of cleanliness is commonly associated with a forest that has very little ground vegetation and where shrubs (which are typical in Mediterranean forests) have been partially removed.\textsuperscript{51} In the language that is common to forest owners, “\textit{to clean}” is synonymous with clearing brush. In opposition to the concept of cleanliness the terms “\textit{dirty}” (in Catalan. \textit{brut}; in Spanish. \textit{sucio}), “\textit{untidy}” (in Catalan \textit{deixat}; in Spanish \textit{dejado}), and “\textit{neglected}” (in Catalan \textit{abandonat}, in Spanish \textit{abandonado}) are typically used. It is obvious that “\textit{dirty}” and “\textit{clean}” are antonyms, as are the terms “\textit{untidy}” and “\textit{good cared for}.” It is quite true, in many cases, that if forest work is neglected, if the forest is ignored or “\textit{abandoned}” it takes the appearance after a few years of a natural, unmanaged Mediterranean forest\textsuperscript{52}.

\begin{flushleft}
\textsuperscript{48} These two concepts in this sentence do not have any theoretical framework behind.

\textsuperscript{49} E.g JP, PF, JF, FF, EV, PV,

\textsuperscript{50} JP 329

\textsuperscript{51} Traditionally because of the human activity, mainly through grazing or used as fuel wood or coal.

\textsuperscript{52} CS 10
\end{flushleft}
None of the interviewed forest owners or managers offered positive descriptions of the natural Mediterranean forest; no one said, for instance, "wide variety of bushy species", "botanical wealth," "varied strata that would allow the coexistence of many species of fauna". In contrast, when interviewing a biologist he used this sort of terms to describe a regular forest in the area.33

It is difficult to precisely define the somewhat nebulous term, "good and clean", as it is used by forest owners and managers in this region, largely because its meaning seems so obvious to them that they have problems to put it in words. However, there are a few common denominators in the usage of the term (Table 13), the first of which describes a forest with little ground vegetation, tree crowns that do not touch one another, and in which there are few branches on the lower portion of tree trunks and no prickly plants.34 Other common indicators of a forest that could be described as "good and clean" are the ability to walk through the forest and a reasonable level of visibility.

Table 13: Expressions close to the concept “clean and good” found during the interviews and their translation into English

<table>
<thead>
<tr>
<th>Accessibility</th>
<th>“Clean” forest characteristics</th>
<th>“Dirty” forest characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“We can enter,” “we can enter easily,” “we can stroll inside”</td>
<td>“We cannot enter,” “it is difficult to enter,” “there are prickly plants”</td>
</tr>
<tr>
<td>Visibility</td>
<td>“To discover what there is,” “to see what there is”</td>
<td>“There is no visibility,” “we cannot see anything”</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>“It is beautiful,” “it is tidy”</td>
<td>“It is disgusting,” “It was really a mess”</td>
</tr>
</tbody>
</table>

Accessibility
The ability to walk through the forest is used as a sort of barometer by several forest owners to measure the cleanliness of a forest. Walking through the forest is understood simply as being able to enter it where there are no roads.

A high density of shrubs (e.g. Buxus sempervirens, Rosmarinus officinalis, Erica arborea, Erica multiflora, Ramnus alaternus, R. lycioides, mainly) and of young and thin trees, the proliferation of prickly plants (e.g. Genista scorpius, Ulex parviflora, etc.), and the existence of lianas (e.g. Lonicera implexa, Smilax aspera, Rubus ulmifolius, Rubia spp., etc) make entering forests more difficult. Similarly, the presence of many low branches also makes it difficult to pass through the forest, lending it an appearance of untidiness."I want to say in the concept of the people, that people can not get in, when I say dirty, you see”35

"...typical and dirty means brambles, argelagues, as we call them there, with branches everywhere, and sometimes you can’t get past, and other times it seems as if the earth is sick. Everything with thorns, that doesn’t seem as if it could be there, is there’’.36

"Well, it was pine and clear underneath. That is, the Black Pine and that and a bit of grass, but there wasn’t a forest. And like when you have to go with a... that you have to keep separating (the vegetation)...you know? When you have to search for a path or that. No, it was clean, that means you could easily walk just about anywhere, there was even a cairn that they had made there... with stones. What I want to say is that it was all really clean..” 37

53 CS 76
54 E.g. FF, AC, DR, LC, MC, JA, PA
55 JA116
56 JA 22
57 EV 19-22
“Basically it is that the forest is very dirty. It’s very thick, there is very high undergrowth, the crowns touch each other.” 58.

Visibility
Another common indication of a clean and well-maintained forest is the ability to see far distances in the forest. The interviewed forest owners express satisfaction when, once ground vegetation has been cleared, both the range of sight and the amount of property that can be seen increase. They tell of how they rediscovered their property once they thinned the forest and of how they could see terraces and views in the forest that they had never noticed before.

“Yes, we like walking, we go to see what’s been done now, don’t we? For example, cleaning: you go walking there and as it’s all clean you see things you had never seen before because the truth is it was all a real mess. And now... it’s nice, it’s nice” 59.

The next fragment illustrates the importance given by forest owners to the ability to see through the forest. Tau bought a property three years ago, and he explains how he decided to remove the shrubs in order to increase forest visibility, to facilitate accessibility for the purpose of silvicultural work, and to rediscover the property on the other side barrier that had been created by the shrubs. The segment transmits the enthusiasm of the forest owner when looking at the result of his activity.

“Incredible the forest, isn’t it? A bit ... We also got rid of the gorse a bit to see, to be able to walk and to work, to discover it” 60.

Aesthetics
To many forest owners, the aesthetic of a forest serves as a practical indicator of its proximity to the standard of what a forest should be like. According to this ideal, the model of a clean forest is characterized by a sparse, tree stratum with little regeneration, a scarce shrub stratum (with few prickly species) and without vines. The absence of branches and the discontinuous vegetation is also highly valued. For example, cleaning, you go walking there and as it’s clean, you see things you had never seen before because it was a real mess, and the truth is that now it’s nice.” 61.

The two following images were taken at a property located in the central region of Catalonia. The forest owner showed us how part of the property was “dirty” and how the other part was “clean.” The first image exemplifies what is generally considered to be a “dirty” forest. The characteristics of a “dirty” forest that can be observed in the photograph include the high presence of ground vegetation (especially if there are prickly species), dead branches, a high density of trees, and the significant difficulty of walking through the forest.
Results and Discussion

Picture 4: Pine forest (*Pinus nigra*) with holm oaks (*Quercus ilex*), with ground vegetation of *Genista scorpius*, rosmarine (*Rosmarinus officinalis*) and *Juniperus oxycedrus*, defined as “dirty”.

Conversely, the following image shows a different area within the same forest which had been “cleaned.” The “clean” forest has clearly distinguishable strata; the shrub stratum is minimal, there is a greater density of tree trunks and there are almost no low branches, the visibility is good, and we can pass through the forest with ease.

---

62 Thinner trees and bushes were removed. Low branches from remaining trees were pruned.
The differing perspectives of ecologists and forest owners

While the bulk of this analysis thus far has focused on the perspectives of forest owners, scant attention has been paid to the opinions of ecologists that have studied Mediterranean forests. A comparison between the different models forests of forest owners and ecologists is of particular interest to this study because they tend to have differing, and at times contradictory understandings of what constitutes a healthy forest. Ecologists, for example, have a much more favorable and approving view of a forest characterized by the presence of prickly shrubs and vines for their contribution to the biological diversity of the forest.

Though ecologists favor dense, unmanaged forests because they more closely resemble the natural condition of a forest that has been untouched by civilization, forest owners reject this ideal, largely because of their exposure to the archetypes introduced at the beginning of this section. One of the main reasons that forest owners prefer “clean” and managed forests to the wild models of biodiversity is the comparison they draw with forests of the past: “before the forests were cleaner”, “before we could walk through it.” They compare the current condition of the forests with that of their ancestors, which an especially anthropic cosmology. They explain that when the forest was grazed by livestock it could be traversed with ease, and they also explain that when there was a wild forest and there were not shrubs – because they were used as firewood – wildfires were less devastating.

63 In general, Mediterranean forests feature a tree stratum, a shrub stratum and a forb stratum. As the ecosystem matures, the tree stratum becomes dominant and the shrub and forb strataums reduce. In mature forests, the lianas or vines assume an important structural role. The mark of human activity can be observed in both the dominant tree species and the set of plants that surround these species. The Mediterranean forest vegetal species have had to adapt to the main instrument of forest management, the fire, which has been used in this region for centuries. These species have also had to adapt to summer drought, which is a characteristic of the Mediterranean climate, thus the sclerophyll is one of the main strategies in the Mediterranean ecosystems in order to adapt to the annual period of hydric stress.
Results and Discussion

Mr Roca, a farmer and forest owner in his 70s, explains the effect on the structure of the forest when the traditional use of light firewood that had been used as fuel for bread ovens was abandoned. He locates a turning point at this technological shift, attributing the beginning of forest neglect and “decay” to the discontinuation of wood gathering for firewood. This excerpt illustrates how the state of the forest with increased shrub density is equated to dirtiness, and dirtiness is comparable to decadence.

“Yes, yes... in fact, for a farmer there’s nothing new about it, cleaning a forest. Well, as we’re talking about that time... when... then the forests were cleaned for firewood, for the firewood for the bakers’ ovens.... that is...They made bundles...and the people wore special trousers so they wouldn’t get scratched, you know what “feixines” means?

Q: Yes, bundles...

Some bundles, and that is what they used for the bakers’ ovens. And I remember when we bought the first tractor that was more or less big, but we didn’t have enough work on our land, sometimes in the winter I had gone with the trailer to get bundles out of the forest, loaded the trailer with bundles, and the tractor driver helped me and we took them to the baker’s...But, you can see... when it stopped being profitable to use this firewood is when the decay set in. Because then the forests were clean, normally” 64

The inconvenience of an untidy forest

Two categories have emerged from the interviews to describe the displeasure brought on forest owners by natural forest conditions: there is, on one hand, the inconvenience of a forest that is untidy and neglected, and, on the other hand, forest owners are generally uncomfortable with changes to familiar forest conditions.

Just as there are people who try to keep their gardens tidy, the balcony clean and full of flowerpots, forest owners show a clear preference for forests that have been thinned and maintained. In both cases, disorder is considered an inconvenience, either because untidiness is visually disagreeable or because interactions with such disorder require more effort. If untidiness is regarded as a nuisance, then it should follow that order brings pleasure to most forest owners, as most of them can appreciate the beauty of a well-maintained forest. This is not a matter of preferring one silvicultural model that can produce better quality or higher quantity; instead, it offers insight into why forest owners adhere with such loyalty to an established order, archetype or pattern.

This desire on the part of forest owners to make the forest conform to an established archetype stems from their tendency, as individuals, to take comfort in the familiar. In the previous section, Mr. Roca mentioned what he considered to be the beginning of decadence. For many forest owners the logical sequence is as follows: The known world is secure and somewhat predictable; we manage the forests now and our ancestors managed it as well in their time. We are comfortable with the present conditions because they are familiar, but we don’t know how we would manage in a changing world, a world where country life is abandoned. We don’t graze any more, the forest appearance is different than it was beforehand, and the accessibility and visibility are disturbed; a world in decadence.

The following quote shows how the change in the traditional aesthetic of the forest causes a negative feeling in this landowner.

“Right, before, those branches went to make bundles and with these bundles they went to the “berdagals,” and with those bundles, then to the baker’s ovens then to

64 PF 280-285
bake the bread, or home to light the fire. Not any more. Nobody wants that. And they left everything there in a way filthy...\(^{65}\)

**Justifying silvicultural practices**

If abandoned forests are more vulnerable to forest fire, the opposite should be true of forests that are well-maintained and protected: they ought to be more resistant to forest fires, or at least less dangerous. The necessity of thinning the forest can often be justified because it serves to reduce the fuel, in addition to improving the conditions faced in the event of forest fire.

Forest scientists argue that when removing shrubs, the risk of forest fire reduces. The fuel ladder is broken and it is more difficult for the fire to reach the crowns of the trees and grow into a bigger fire. Management and protection is, in this sense, a matter of modifying forest structures so that when there is a mild forest fire it does not burn into the trees on the property.

Forest owners link the absence of ground vegetation to a reduced vulnerability to forest fires. However, when discussed in greater depth and detail, many forest owners question the actual utility of thinning and “cleaning” to prevent forest fires. They think that if there is a lower fuel load in the forest, if the crowns do not touch each other and if there is not a fuel ladder, it would be more difficult for fire to spread. Differentiating forest fires based on the level of influence and damage a fire might have, forest owners talk about big fires, which cannot be controlled, and small fires, which can be restrained by clearing the brushes, removing thin trees, pruning, etc. Pep, a forest owner worried about wild forest fire who undertakes many silvicultural activities to prevent it, synthesizes these classifications about forest fires in the following fragment:

“Really... (silence) let’s see, I’ve got my doubts about whether it’s good for the fires or not because when one of those fires come that’s so, so enormous, I mean, it doesn’t matter if it’s clean or not because that just burns up everything just the same. But... well, if they are small fires or that I suppose so (...) Well, I’ve got my own opinions..... There are fires that jump a six lane motorway with a central reservation and you can’t stop that kind of thing anywhere, can you? I doesn’t matter if you’ve got a firebreak. Well, specific things with.. with weather that doesn’t have... those droughts and that lack of humidity so incredible, then yes it might be good, obviously.”\(^{66}\)

While the forest owners may clear the brush in their forest, they often harbor doubts about the effectiveness of these measures to prevent and extinguish forest fires. Thus, clearing brush and thinning the forest is justified both with the aim of reducing fuel, and also the reduction of vulnerability to fire.

Next excerpt illustrates how the forest owners link the absence of silvicultural treatment to disorder and to an increasing risk of forest fire. In the first text the forest owner links vulnerability with mess. In the second, Carles, a forest owner who’s property is in a protected area that cause some limitations to his activity, explain that limitations to silvicultural activities will lead to more forest fires.

““There will be that kind of fires because the forests are all a real mess...”\(^{67}\)

“One of the things that is really clear: when a forest is protected with APACs\(^{68}\) or with PEINs, within three, four, five years it all goes up in smoke... Why? Because

---

\(^{65}\) CI 186

\(^{66}\) PA 128

\(^{67}\) CI 10
the owner abandons it and as a result it ends up all messy... That’s what it’s like, isn’t it? 69

Thus, the sight of a neglected or forest is perceived as a symbol of a changing world (which evokes the constant comparison with earlier conditions) and it brings discomfort to those that feel responsible of the forests. They link the fact of having a dirty forest with a higher forest fire risk, even if they have their doubts about the effectiveness of the cleanings to face the forest fires (especially the big ones).

Next excerpt shows how a forest owner who was unable to undertake silvicultural activities in his forest was feeling bad about it and he try to give some reasons or causes that can lead a forest owner to neglect its property. Is notable how he as a “bad season” the period when he couldn’t clean his forest, meaning that it was not his aim.

“I’ve also had bad times when I haven’t done anything, not much clearing, have I? There’s a bit of everything.

Q: Why do you say bad times?

I say bad because before managing the forest it was left to its own devices, that’s the way it is, that’s the way it is, I mean... Let’s see, there are people who can’t; nowadays, cleaning means (he makes a sign with his hands to indicate money), I mean, there are people who don’t have the means and more so when we are talking about this area round here on the plain,... That means that sometimes it isn’t so much cleaning a forest as cleaning a verge. (....), but there are all sorts, I mean, you see they don’t clean the verges, but not because they don’t want to, it’s that sometimes they can’t, because nowadays, it costs a lot to hire a machine, and if you haven’t got it or you haven’t got the time or you’ve got to go to hire it, and sometimes it’s older people whose kids are completely disinhibited from the property theme, and I’m not talking about forestry things, from the property theme, they live somewhere else and in another time”... 70

Improving the wealth

Not everybody links the prosperity of their property to its level of cleanliness. Instead, some forest owners associated prosperity with the maintenance of roads and the capitalization of the wood. This association has been observed mainly in forest owners that derive significant income from the forest.

These forest owners do not “clean the forest.” When asked about thinning the forest, those that refrained from forest thinning justified their decision with explanations of economical efficiency. Most of the forest owners that offered this perspective relied on the forest as their primary source of income. They did not remove the shrubs because they didn’t consider them to be a source of competition for the tree species cultivated on their land. Although they were aware of the risk of forest fire, they did not bother taking the preventative measure of removing the shrub stratum.

“Q: And do you clear the undergrowth?

68 Designations for protected areas.
69 CI 90
70 FP 102-107
Yes, we do a lot (...) Depending on whether it’s needed, whether it’s needed because the plantation, for example, where it’s been done can prosper, or to make it easier to do a job that... a job we have to do, like, it could be, I don’t know... thinning or pealing cork or... cutting, cutting a Holm oak, or a beech tree or whatever... a close planting, for whatever, then we do clear the undergrowth... (...) Normally it’s done, normally clearing the undergrowth coincides... with one of two things, either another job that needs doing – making it easy to get in, well getting into the forest, or to help a plantation to grow well, which is normally when it’s a young plantation, ok? Then eh... these clearings are done. (...) Or for example the case of a... the case when you’ve had a fire, OK? A fire like the ones we have from time to time, and then we clear the undergrowth so the generation there can get ahead. Get ahead, select the sprouts from the stumps of broadleaves that have sprouted, where a pine has sprouted and you can help it to get ahead... Always with some idea in mind, but clearing for clearings sake... no we don’t”.

For other forest owners, the condition of “goodness” corresponds to an improvement of the productive capacity of the forest, road maintenance, and even the maintenance of the house and other structures on the property. In the following example, the forest owner explains his conception about forest “goodness” and illustrates how important is to him. He is willing to expend in keeping the property money earn from other sources of income, and he also search for imaginative strategies as asking for agreements with the administration to conserve his forest.

“What am I talking about? Well about... the, the, about the, the forest, the forest as, like, like what I believe are good conditions. That means: everything capitalised, in case better times come round some day; reducing the fire risk: with the main tracks looked after, not leaving rocks there; the patrimony on these properties, that means the houses and all that, try to keep it all up too, .... (...) And that, how? Well... who knows. Well, investing, investing what little we get out of the forest, investing if needs be... what we don’t get out of the forest and what comes from other things, trying with, with... with administrations eh... to get agreements on maintaining tracks, to... who knows, I don’t. That’s a bit like my..., my obsession, now, isn’t it?, my way. To try, try to maintain the property with... within one’s possibilities, isn’t it? Because what I won’t do is to throw it all away, obviously”.

Summary

The existence of a moral rule is a good incentive for engaging in forest management and taking care of the property. Although this sort of rationale has largely been superseded in urban environments, it still serves as a guiding principle to many people in rural communities. This is closely linked to the fact that many forest owners have a archetype of how forest should look. This archetype can provide a standard from which a forest owner can learn, whether the archetype is encountered during childhood, forestry classes or even consultancy. When forest is far different from the known archetype, landowners tend to feel like undertaking silvicultural activities (specially removing brushes, pruning low branches) to make the forest close to their archetype.

71 JG 73
72 E.g JG, JR, ER, LC, PV, EV
73 JG 259.
74 Activities that forest owner do to keep forests “clean” and “good”
   - Clean: to remove the ground vegetation, thinning, pruning, management plans in order to have access to subsidies.
Strategies and favorable ideas for the management

Strategies geared towards following a particular model mainly involve undertaking silvicultural activities to make the forest look as it looked in the past or in the forest owner’s native region. When forest owners do not have a clear personal model and do not know how a well managed forest should look, they ask for advice or try to construct the model through information or other kinds of knowledge transfer.

Ideas that are favorable to forest management are:

- The property is not mine; it belongs to the past and future generations. My mission consists of taking care of it and of improving it during my life (generational agreement).
- The forest must be “well cared for.”
- If the forest is dirty, it is because it is neglected.
- The forest must be clean (close to an archetype).

Unfavorable ideas for the management are:

- It is expensive.
- It is not worthwhile.

6.3 “Who say it can’t happen to you?” Managing the risk of forest fire

To speak of forest fires while interviewing forest owners in the Mediterranean is almost inevitable. Whether in the form of fear that it inspires, or from of personal anecdotes (nights spent extinguishing a fire in a nearby zone; summers of extreme drought, which they spend waiting for their “turn”), or of the measures taken to prevent it or to improve the conditions for fire fighting (underbrush reduction, construction of water points, agreements with the government), almost all of the forest managers tell wildfire-related tales.

6.3.1 The fear of forest fires

Fear of forest fire, above all in the summer months, is raised in many of the interviews, and few forest owners failed to mention it. Phrases similar to the following examples are repeated throughout the interviews, describing the state of fear and anxiety in which forest managers live, particularly in the summer, of being confronted with a wildfire on their land.

- “What frightens me is if someone starts a fire in the summer.”
- “…When I go on holiday, I always go with a feeling of fear that they’ll call me one day to say that everything is going up in flames!”
- “…Yes, yes…and every summer is a trauma at home……”
“...Every day I remember that I went to bed thinking, “You won’t get out of tomorrow...””

“...It’s like a lottery and one year or another your number will come up.”

A sense of fatalism lies in each of these comments, as if the forests were predestined to burn and that the only conditional factor is the moment at which it will happen. When they have lived for a significant period of time in a fire zone, there is an increased resignation among landowners to the belief that at some point a fire will start. That conviction and sense of risk increases even more when the individual has witnessed the burning of a neighboring property, as is the case in the following example: “Who says it can’t happen to you?”

“The problem in the forest is that danger, isn’t it? That you have to go through it every year. If yours will get burnt or not. Ok, so I’m very pessimistic aren’t I? In that sense. But, well it’s clear, we’ve already seen a large part of the district go up in flames. Who says it can’t happen to you?”

This anxiety has such influence on forest owners that it is common for them to want to forgo any vacation during the summer months – peak season for forest fires in the Mediterranean region – and instead they decide to remain on the property in case a fire might start. It is as if they think that being close will serve to protect the property.

“It conditions me, for example, not to go too far away on vacation in the summer: that, yes...It conditions me. If I want to go, for example, to Euro Disney with the kids for three days, well I will go...in autumn, right? Or for Christmas, but not in the summer.”

What are forest owners afraid of, exactly? Which consequences of a fire instill fear in them? Forest owners mainly fear the loss of their homes – if it is there. Protecting the home and farm in case of fire becomes a high priority; but they also fear fire in the forest. Although fires evidently inflict economic losses, it is not the loss of wood that forest owners fear most (some even affirm that the wood is worth just as much burned). The change to the landscape that was once familiar to them and the loss of the patrimonial legacy that has been given to them and that they intend to leave their descendants is the concern that they express most.

Change to the landscape produced by fire is perceived negatively. Forest owners speak of the altered landscape in morbid terms, referring to “razed,” “destroyed” and “lost” forests, and of a “desire to cry.” Even years after a fire, when regrowth has begun, the ground appears covered with shrubs and the general appearance and aspect of the forest “green” again, the new landscape still feels alien to them. In the following excerpt, Jordi a 30-year-old recounts how he suffered when seeing the places that he knew in his childhood “devastated,” as they were.

“I would feel really bad... But I’ve already seen various fires. I felt really bad about the one twelve years ago; I had a really bad time. It was terrible because all the places where I’d been when I was a child, and the mountain streams and all that, sometimes, devastated...”

Teresa, a forest owner in her 40s who works as a teacher in Barcelona, explains how after the fire on her property, the landscape seemed foreign to her, as, for example, spatial distances seemed much closer than before. She distinguishes between the ecological impact that the fire
will ultimately have (it will recover with time, in Catalan amb el temps y una canya”) and the impact that it will have on her emotions, on the human scale. She acknowledges, with pain, that even though she knows that it will recover its green appearance “with time,” she will never see it again “like this.”

“Well, it looks green because the plant cover has recovered. (...) All at once the country got small for me, like, “Ah!, so that house is there? The chapel is right here? I thought it was a lot further away...” because you can see, when it all ended up like this...(She waves her hands to indicate the absence of trees and obstacles) Well, I suppose that, yes, with time and luck... (It will recover) Look, the problem is that our memory isn’t geological memory, shall we say. Obviously, you this way you’ll never see it again...”

The interviews with people that have experienced fires generally reflect deep pain and emotional impact. Indaleci, a forest owner on this 40s whose property was devastated when he was a child, explains his grandfather’s grief after a fire destroyed his property. His grandfather loved his forests, and the family thought that the misfortune of seeing them burned was a detriment to his worsening health.

“It made you cry. My grandad couldn’t stop crying. When he went there all he did was cry, poor man...

My father always said, “Grandad died of the sorrow”, because it came out like that... He was one of these men who had never been to the doctor in his life, had he? And he’d always worked. Then his sugar went up and he died of an attack of sugar. A whole lot of things started coming out and one day he went to bed and his sugar went up and he just never got up again. And always, I always heard them saying at home that “Grandad died of sorrow after that fire up there.”

Yes, I’ve always heard that said. He really loved all that”.

These examples are just a small sample of the great deal of emotion that owners have for the loss of their forests. Although they may think, “even though it is burned, the wood will be worth the same,” or they might have insurance that covers the damages, the emotional impact of a fire is nevertheless very great.

6.3.2 Perceiving risk

The general perception is that the risk of fire is elevated now in relation to the past. In all the interviews that have addressed the issue of fires, the perception can be observed that fire is something that can happen (and that probably will happen). The perceived risk increases when there are or have been fires in the area. Landowners experience paranoia, living each day in fear that “it’ll be our turn tomorrow.” And all of them worry about ecological and meteorological conditions during very warm and dry summers or windy springs: “if we get caught by a year like last year... a summer like that... you can bet you’ll be on the six o’clock news,” one owner remarked.

Forest owners express, above all else, a fear of great fires. Expression of helplessness, like, “when a great fire comes, there is nothing you can do,” appear in many of the interviews. Without needing to demarcate the proportions or dimensions that separate “great fires” from the

---

85 TB 100
86 IG 199-204
87 SC 68, using her son words.
88 EC 168
others, they refer to fires that “cross highways,” or that “cross three-lane highways.” When confronted with these great fires, there seems to be nothing that can be done that would be effective or useful, in the opinion of the interviewees. “There is nothing you can do,” they lament; “everything will burn, either way.” It makes no sense to them to make 25-meter protective strips when a great fire crosses highways of greater width.\(^{89}\)

Though forest owners believe themselves to be incapable of mitigating or taming the destructive force great fires, some do try to fight the occasional smaller fire. To this end, they clear zones of scrub, thin the trees and they construct water points and improve the roads, among other things. They know that they are fighting against small fires, and they doubt the efficacy of their methods against the aforementioned great fires. Pep, a forest owner who bought his property with her wife few years ago, explains in this example that all of the methods that he takes on his property (clearing scrub, basically) will be useless if a great fire occurs:

“Let’s see, I have my doubts about whether it’s good or not for fires to burn, because when a fire comes they are so...so big, that is today, it does not matter that this has been cleared or not because it will carry on either way. But if they are small fires. I suppose that yes (...) there are fires that cross three-lane highways plus the median, and there is no way of stopping these, right?\(^{90}\)

Pepita, a forest owner from the south who is really worried about forest fires and who’s husband belong to a forest association to prevent forest fires, offering a different argument, believes that to clear scrub and to make a strip of low-density vegetation around the perimeter can potentially reduce the intensity of the fire, and therefore reduce the damage to the trees. The underlying idea is nevertheless the same: in the event of a great fire these are useless measures.

“Safeguard from fire, no; Protect from the intensity of the fire, maybe... That the fire might not be as intense if it weren’t clean, ok, but the fire will burn through anyway... Fire can jump the motorway and the main road, it crosses everything, this way to the village A also here in Village B , all that which has been burnt so many times..., it jumps everything... It crossed the railway.... it crossed the railway and these two roads. Up there there’s a 25-metre strip which, as well as having 25 metres (clean) there are also a few pines... it’ll burn fast..., and also, there’s a lot of combustible material distributed everywhere outside that strip.”\(^{91}\)

Although in respect to great fires the position is unanimous, with other (smaller) fires there is more diversity of opinion. Therefore, while for some of the forest owners there are no effective measures that an owner can take, for others the risk of fire can be managed by their own efforts.

“You say, “Hey, all that money that’s getting spent on stuff to put fires out we could invest in prevention, and for me, prevention is clearing tracks, fixing tracks, water tanks so that if there’s a fire one day it can be put out, teaching people, because people are really dirty, I mean... Look, the forests burn for lots of reasons, among which is that people don’t respect them. The forest is very nice, but also, for God’s sake!, look after it a bit!, look after it!, love it...! There is a lack of culture... People... I don’t know. There could be a culture, a... I think we could invest in prevention, and prevention would be teaching people to take care of a love the forest and, on the other hand, money to fix the tracks and keep the forests in the minimum of good condition”\(^{92}\).
6.3.3 Manageable vs unmanageable risk

For some forest owners, the risk of fire (or the resulting damages) can be reduced through human intervention, specifically though forest management; for others, on the contrary, forestry and forest management is irrelevant to fire prevention. Eugeni explains that the sight of an abandoned forest which hasn’t been managed previously is more vulnerable to fire. In addition, he questions the effectiveness of putting a fire out if there has been no a previous preventative work related to forest management.

“I go there and I see it all dirty and it makes me feel really bad, and... I don’t know, an example: two years ago it snowed a lot, and some branches broke, some pins fell down... Right, so, you go to see it and you feel sad and also that... you think that it’s really easy for fires to start, for example...(...)
I don’t know... they spend a lot on... what we were saying before, on firefighters, and that’s good that we’ve got them, and water bombers, but it’s clear that... it isn’t tidy. When there’s a big fire... there’s nothing we can do. If the forest hasn’t been managed before and it isn’t clean, a bit looked after, with water outlets... it’s interesting to create more water outlets... but well, basically the thing is that the forest is very dirty. It’s very thick, there’s very high undergrowth, and the crowns touch each other...and all that.”

Therefore, we encounter both manageable risk and unmanageable risk in one’s own action or inaction. Unmanageable risk, risk against which no action can be undertaken to diminish or mitigate the consequences, is defined by its perceived inevitability. The perception of which type of fire is manageable or not, and therefore to which type of fire preventative measures must be applied, depends at the same time on one’s own perception of the causes and of the relative risks.

In this excerpt, the forest owner, after justifying his silvicultural intervention in hopes of preventing forest fires (basically, the reduction of underbrush) and criticizing his neighbors for not employing such practices, reflects on the utility of his work. He believes that in the case of a small fire it would be useful, but that in the case of great fires it would not make much of a difference.

“let’s see, I’ve got my doubts about whether it’s good for fires or not, because when one of these fires, these ones that are so, so huge, I mean, it doesn’t matter if you’ve got it clean or not because everything will go up anyway. But... well, if they are small fires and that, I suppose so.”

These sentiments are not isolated to individual landowners or forest regions. Many forest owners are more apt to consider taking preventative measures and damage control when confronted with smaller fires, as another owner corroborates:

“And well, all we are winning, every year that we don’t have a fire and we clear more undergrowth, then we’ll be better prepared for when the fire comes and that... it affect less or the effect is more... soft, isn’t it?, or that we save, in inverted commas, more... Well, I don’t know, do I?, but...”

If forest thinning can diminish the frequency of fires, or at least their destruction, what factors, on the contrary, can exacerbate the risk of fire? What are the risk factors?

93 EC 162
94 PA 128
95 CH 185
6.3.4 Risk Factors

During the interviews, three risk factors have predominated over all others: the presence of forest visitors (and pyromaniacs) and the excess of biomass in the forest, which is intimately tied to the third factor, forest neglect.

Forest visitors increase the risk of fire

The traffic of vacationers and tourists visiting forests during the summer months is a factor that increases the risk of forest fire. On the one hand, there is the possibility of an accident related to the fact that visitors light fires to prepare food or are negligent with cigarette butts; on the other hand, there is concern that some of the visitors are potential pyromaniacs. With the forest owners already distressed in the summer over the atmospheric conditions, the reckless behavior of visitors is viewed with indignation. In addition, any time there is a major public use of private property some property owners complain that the visitors treat them with little respect, “as if they were in their own houses.”

“It is just that hey stop wherever they want, they have lunch or ... I’ve seen people stopping at my house, they had lunch, even stayed to sleep, starting fires in the middle of summer... I, it’s hard to believe but... you go there, tell them off and nothing, like water off a ducks back... You say, “Oh, yes, here there’s a flat area of I don’t know what...” Every day they send you the fire risk for the area from the council, which is one of the highest... but I don’t understand, no... Well, it’s not important for them because they don’t know it, but it makes my hair stand on end...”

The other people’s cars within the community are observed and watched over by the forest owners themselves, who in the summer write down the license plate numbers that seem suspicious to them... just in case. Josep, a forest owner who is also a farmer and lives on his property with his family explains how they monitor unknown cars within the neighborhood during summer.

“Obviously, the problem now is that a lot of people come, and they’re really from the country aren’t they? The farmers in this area, and I suppose in every district it’s the same? The farmers from your area... are really from there. And when you see a car you don’t recognize... it’s like a headache, every time you think about it. (...) A lot of times, then, you go and write down the plate number because you think... (laughs) let’s see who it is... one year...we say one who spent his time going up and down here and there and in the end they found a guy who spent his time starting fires”.

Biomass and neglect

The presence of shrubs, dry branches, vines, densely-packed thin trees, etc., is perceived by most forest owners as an accumulation of biomass that, in the case of fire, would become biofuel; a “powder keg.” As the statistics illustrate and forest owners generally observe, the problem of fire has been aggravated in the past few years, and thus it seems to many forest owners to be a relatively recent phenomenon. Older forest owners report that there were not nearly as many fires in their youth, and any story of a forest fire came in the form of an anecdote with an almost mythical character to it.

96 MT 158, PA 108
97 DR 76-176
98 PV 243-273
99 IG 99; CH 166, JR 87; JP 282
Àngela, 86, describes how past fires, if there were any, were extinguished quickly and they did not cause as much damage as the present ones. However, she says, methods of quelling fire and monitoring existing nowadays. For her, as with other forest owners, it made a great difference that more people were living in the countryside. The fires then were detected earlier and extinguished by neighbors.

“Q: And in the past, I mean when you were young, was there this worrying about the forest or...? 
No, no, no. Then people didn’t stick their noses in. The people, I remember that there at our house, a neighbor, had a fire in a bank and it spread up the field. But look, all the neighbors came out and they put it out and that was it in a short time.
There was a bit of fire, but never very much, because they put them out themselves, nobody else ever had to come and there was watching or anything... No, no, not until about... I don’t know, how long ago it must be, twenty or thirty years, that there is this monitoring and... but not before... I remember they used to say, “Look, there’s a fire down there!”. So they went up and down and then it was out already. No tanks or anything, eh? 

Another difference between the present and the past, that time when there were not only fewer fires but they were also less intense, was a time of greater use of forest resources than today. Wood was cut more often and its economic value was higher; people took advantage of the dry branches, dead trees and some shrubs, which were used as firewood for people to warm themselves and to supply the kitchens. The forest zone was less continuous and there were more fields of crops between the forest zones. Livestock was kept in the middle of the forest – mostly cows and goats. The forest was visited more by “locals from the area, people from here” who gathered asparagus, toadstools, dried leaves, etc., on the paths that passed through the interior. All of this human activity gave rise to a forest structure that was different from the current conditions; more cleared and with less underbrush. A forest that shows the effects of more human impact could be passed through more easily.

The present structure of the forest therefore represents a profound change in the way of life in rural areas. The new structure is caused by the abandonment of firewood collection due to, among other causes, the use of butane gas for stoves and kitchens over the past 70 years and the decline in the price of wood. Above all, the exodus of rural populations in favor of larger towns and cities in the 1940’s caused the abandonment of pastures and of farmlands that have since transformed into young forests. To borrow a phrase from a forest owner, with the abandonment of these types of land uses, “the decay began.”

Therefore, we can say that the increase in biomass produced by the changes in the uses of the forest – or neglect – coupled with the population shift that has diminished the human presence in the region, has been perceived as an important cause of the increased risk of forest fire.

Vulnerability of neglected Forests
Another concept that is intimately tied to the perceived risk of forest fire is the vulnerability of the forest that is not cared fore, the neglected forest. In general, many forest owners believe that keeping their property well-maintained (which is often tantamount to the absence of underbrush, and also the availability of forest access under various conditions) reduces the risk of fire. In spite of that, a problem that arises when forest owners think that taking care of the property to diminish the risk of fire is cancelled out by the effect of the (un)managed property of their neighbors, which, in turn, creates an increased fire risk on their own property. Therefore, they

100 SC 84
101 JP 285
think that no matter how much they work on their property, if their neighbors do not take similar measures, their efforts will come to little use.

Neighbors that do not maintain well-kept property in respect to a “great fire” increase the perception of vulnerability to fire in other owners, thus limiting the effectiveness of thinning and clearing one’s own property. Therefore, no matter how much a forest owner maintains his property, if the neighbors do not do the same and leave their land full of shrubs, if a fire is to start, the supposed reduction of intensity will be concentrated in the “clean” plot of land and it will have little effect on the larger whole.

The following excerpt demonstrates that this forest owner believes that if the properties surrounding his were cleared and well maintained, it would be a “serious advantage” when confronted with fire. It is said that the conditions for fire control would improve, but that the current conditions (his is the only property in the area that is cleared) “would not do anything,” and that it would not be an effective measure.

“I suppose that... between inverted commas, in case of fire well... it could be positive, couldn’t it? If all round my property was also clean it would slow it down, but the way it is at the moment... having cleaned my property wouldn’t make any difference.”

6.3.5 Strategies for confronting fire

Forest owners and managers follow both active and passive strategies to confront the risk of forest fire (Table 14). Therefore, while some do forestry work related to the reduction of the amount of combustible material in the forest, others choose not to because the recovery of the investment is uncertain. The various strategies that have been found are grouped in six codes.

<table>
<thead>
<tr>
<th>Strategies for Confronting the Risk of Forest Fires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention 1: Clearing the area around the house</td>
</tr>
<tr>
<td>Prevention 2: Underbrush control and reduction of the density of the forest floor</td>
</tr>
<tr>
<td>Fire Fighting: Construction of infrastructure (water points)</td>
</tr>
<tr>
<td>Purchasing insurance</td>
</tr>
<tr>
<td>Requesting government aid</td>
</tr>
<tr>
<td>Yielding to the government administration</td>
</tr>
</tbody>
</table>

Prevention 1: Clearing the area around the home
The protection of buildings (the home mainly, but agricultural buildings as well) is a priority. Therefore, the elimination of shrubs and bramble around the house is a very widespread custom. Even forest owners that do not intervene in the forests at all “do a bit of clearing round their houses”.

Prevention 2: Underbrush control and reducing the density of the forest floor
“Argelagas” (Genista scorpius), a small, thorny shrub that grows in Spain and other shrubs (including Buxus sempervirens, Rosmarinus officinalis, Erica, Smilax aspera, Rubus ulmifolia, Ruscus aculeate, etc.) make forests dense and promote fire. For the prevention of fire, through either the reduction of fire risk or its “intensity,” the elimination of shrubs and argelagas is a “good but temporary solution.”

Fire Fighting: Construction of infrastructure (water points)

---

102 PA 10
103 E.g. PB 214, XC 54
The construction of water points supplies a means for aerial fire fighting, as well as barrels that can be moved with tractors. Other methods include the acquisition of fire fighting materials (mainly through forest protection associations\textsuperscript{104}) and the improvement of the access points. Some of these measures are subsidized by the Department of Forestry.\textsuperscript{105}

**Insurance**

Some forest owners purchase insurance to cover their losses in the event of fire. It is not intended to be a long-term measure because, on the one hand, the price of insurance is seems high to some owners, and on the other hand, insurance only compensates the loss of wood. This measure has only been observed in forest owners for whom the production of wood is important. Even so, forest owners explain that having insurance only serves to reduce the short-term economic impact. Government subsidies do exist for the loss of wood that has been burned, but the waiting period between the fire and collection of money is protracted. Insurance does permit land owners to receive funds to cover this period of time.

**Requesting aid from the Government**

There are several different ways of requesting aid from the government, but the most common types of aid include: subsidies (mainly cost-sharing), technical support, and lobbying for the construction of infrastructure (e.g. fire restraint strips).

**Government subsidies**

The economic difficulty of carrying out fire fighting practices can be enough to prevent forest owners that want to do so from actually enacting the requisite measures. The forest owner in the following example explains that although he considers fire prevention to be a high priority and he would like to take measures to clean and clear the underbrush, he does not do so for economic reasons. He affirms that he cannot dedicate his time to clearing the forest because he is a farmer and he needs to devote his time to other, more profitable, tasks.

"Man, let’s see. If I could, I’d like to thin the forest. What I was saying, it’s too thick... or clear the undergrowth. But what I want to say is... you can’t. You can’t because you don’t get anything for it. I can’t afford to waste my time cleaning."\textsuperscript{106}

In such cases, government subsidies seem like a reasonable option. Government subsidies are frequently used instruments that have a long government history. The recipients of subsidies complain of the uncertainty that they create, of the fixed quotas of presentation and execution of the projects, and, above all, of the bureaucratic complication that subsidies entail.

\textsuperscript{104} ADFs

Forest Defense Associations (Agrupacions de Defensa Forestal, ADF) were created and their regulations were established in 1986, when forest owners and municipalities launched a campaign motivated by the Catalan government, following the tradition of rapid response fire fighting groups that were formed in Catalonia in the 1960s. ADFs generally include groups of forest fire fighters and groups that work towards fire prevention, and they can function at the municipal [or in group of municipalities] or at the regional level. ADFs can be constituted by forest owners (either individual forest owners or legal associations), town councils, professional agrarian organizations, and environmental associations that are linked to the township or community. The one stipulation of forming an ADF is that 20% of the forest owners or groups in the region must be represented; or, at least 30% of the forest land in within the delineated area must be represented under the newly-formed ADF. Therefore, it is important for the town council of a particular area to be represented by the ADF.

The main objectives of the ADFs are:
- To develop and execute surveillance and forest fire prevention programs.
- To cooperate actively in the organization, control and execute both fire fighting and preventative measures; or, to allow the competent administration to establish these measures.
- To motivate campaigns to assign fire fighting and preventative work among the forest owners in order to increase their knowledge and level of engagement with the forest.
- To increase awareness ADF’s zone of intervention among both the rural and urban populations.
- To execute preventative plans, and to create and maintain infrastructure, road nets and water sources.
- To assist in the suppression of forest fires.

\textsuperscript{105} See Table 18

\textsuperscript{106} EC 90
Subsidies usually cover 60-90 percent of the actions performed (cost-sharing incentives); the forest owner must pay the rest, which is why the cost effectiveness of forest thinning must be appraised before it is carried out. Many try to come to an agreement with the highest price, thus reducing the amount of money that they must commit: “with grants, we make the peace.” Those that do not request government subsidies for work that could be subsidized claim that the difficulty in processing the work, overwhelming bureaucracy, bad experiences with the government, inability to fulfill the requirements, ignorance of the procedure or the existence of subsidies, technical ignorance, or an inability to invest.

The existence of government subsidies to perform this type of work is a determining factor for some forest owners who, without aid, would not do the work. The area to be thinned depends on the economic resources assigned through government subsidies. In the following example, the forest owner explains how he wanted to clean 12 hectares and asked for funds to do it. The money was granted to him (80 percent of the budget) to carry out the work in four hectares, and so that was all the work that he did. The eight hectares that he was not able to clean will be done as money is granted (“if there are more subsidies”, he emphasizes).

“We solicited (subsidies for thinning and shrub control) for 12 hectares, and they finally cut it back to four or five. In any case, we have done these four. We have done four. Right, next year if there are more (subsidies), then we will do three more and…Continue like that.”

Others, however, thin the forest with their own resources because they believe that it is necessary, but for various reasons they do not request money from the government (poor planning, anxiety over “paperwork”), or when applied for, the subsidies have not been granted.

Technical support
New forest owners that are unfamiliar with forest works (or forest owners that have not studied or that come from other regions and are unaware of the sort of work that is done) request information from the government, and they do not always receive a sufficient response. The University and research institutes sometimes serve as an alternative in providing information, and they also offer private consultations.

To allow or request the construction of infrastructure (fire-resistant strips)
The government constructs, within the framework of the PPP (area of prioritary protection) or other planning against fires, infrastructure that is superior to that of one’s home. Fire-resistant strips, zones with low-density vegetation at the side of roads, and managing vegetation with controlled burns are the main measures taken by the government. Although many forest owners applaud these measures on the part of the government, for others it is a cause for mistrust because it is an infringement on their property rights and an uncompensated economic loss.

Yielding to Government management
In some zones, “deals” have been reached in an experimental manner between forest owners and the government. The agreement consists in the government assuming the role of property manager for a determined period of time. In case there are benefits from the sale of wood, the forest owner receives a predetermined percentage of the profit.

In other regions, however, this model has not worked. Ernest, a very active forest owner who tried to organize other forest owners in the region in order to sign agreements with the government to manage forests, explains that in his region, many forest owners (the majority of the people) did not want to sign the contract because they feared losing their property rights, and

107 PA 105
108 note of translation: Convenios in Spanish
that the government, as he put it, “\textit{would do whatever they wanted}.” Others refused to sign simply because “\textit{they cut too much}” (and it would mean losing the resources that belong to the owners).

\section*{Summary}

Forest owners are well aware of the risk of wildfire, especially during the summer. The primary impact of a wildfire is emotional; due to the loss of the landscape, of the green forest, that sense of emotional loss outweighs the fear of economic loss that also exists. The belief that risk conditions that are caused by human interaction with forests can be diminished is the groundwork on which forestry and prevention rests.

Forest neglect (increase of biomass), along with the carelessness of visitors are seen as the chief risk factors in forest fires. These two factors are intimately connected to the profound changes undergone by the rural areas in the twentieth century. For these reasons, forest owners conduct forest maintenance (reducing biomass, which makes the forest appear less neglected) when they can afford it. Forest owners that gain economic yield from their forests act differently in regard to forest maintenance than those that do not profit from them and for instance contract insurances or conduct brush clearing at strategic moments or locations.

\subsection*{Ideas that encourage forest owners to maintain their property}

- If I work on my property, there will be less biomass and if there is a fire it will be of lower intensity.
- If my property is not neglected, there will be less biomass and perhaps more vegetation discontinuity.
- Before, there were fewer fires. If my property looked like it did before, maybe I would have fewer fires.
- With government subsidies, I almost “\textit{make the peace},” and it does not cost me very much.
- If I maintain the roads, firefighters will have better access.
- If I create a water source, the firemen will be able to access the supply.
- I don’t have to think about it because if I did, I wouldn’t be able to get up every day to work in the forest.
- I love this forest and I do not want to see it burned.

\subsection*{Ideas that discourage forest owners from maintaining their property}

- I cannot spend time or money on clearing.
- If my neighbor does nothing, what I do will not serve any purpose.
- When there is a fire, there is nothing to do, and one day or another it will reach me.
- I do not know what to do.

\section*{6.4. “The forest is not profitable any more”: The economics of forest ownership}

\subsection*{6.4.1 Three visions of the forest economy}

Based on the analysis and subsequent categorization of the interviews, the forest owners’ perspectives of the forest economy can be separated into three groups:

\begin{itemize}
  \item \textbf{The forest as enterprise} \\
  The forest is a production factor and therefore a facilitator of life. To be successful, an informal cost-benefit analysis of the venture would need to produce a net gain, and the invested capital ought to produce greater interest than it would if invested in another
\end{itemize}
sector. In addition, the forest is often the primary use and investment of family’s wealth, which must appreciate from generation to generation. Money is invested in forests in the form of silvicultural work, improvement to infrastructure, technical support, insurances, and many other similar expenses.

b. **The forest as a bank**
The forest has a secondary role within a family economy: it is considered as a sort of financial reserve. Forest owners that treat the forest as a bank make very few investments in the forest; instead, the forest develops and accumulates wealth by itself, and when money is needed for any extraordinary expense, wood is sold as a solution. Years can pass before it is ever necessary to sell any wood, and when harvesting does occur it generally involves very precise, limited cutting.

c. **The forest as an expense**
The forest is not considered a productive entity, but rather an asset that must be maintained. Therefore, expenses are devoted to the forest, not as investments but as costs directed towards the maintenance of the property. In a manner similar to the way a gardener would approach her garden, forest owners spend money on their forest without expecting to reap any short-term economic gain.

Although they represent slightly different perspectives on how a forest should be used and profited from, these viewpoints do share several similarities, chief among them that the wood is of relatively low economic value. Furthermore, several of the forest owners are incapable of working on the forest themselves and the price of hired labor is prohibitively expensive. All of this can be explained in a phrase: “the forest is not profitable,” a view that is expressed in different ways by many of the forest owners.

Wood is given a particularly low economic value now, compared with the prices it fetched in previous eras. This comparison with the past is raised in multiple interviews, most of which focus on the fact that wood is greatly devalued and costs much less than it did before. This concern is repeated by several interviewees; by those that have tried to sell wood, others that have already done so, and even some that have never tried to sell it because, “like you know, wood isn’t worth anything nowadays.” The following interview excerpts also demonstrate the belief that wood has little value when compared with what it was worth several years ago. In the first excerpt, the interviewed person explains that in the past wood was worth more.

“While Fina’s dad was still alive, we cut down something. I don’t remember what it was... It might have been before we got married that I went to help him with that, marking the ones we could cut down. Perhaps wood was worth more then—more than if we went to cut it now, wasn’t it? Because back then, that wood was worth more money.”

In another interview, the forest owner discusses other uses for forests, such as keeping livestock or using branches as firewood, and she also explains how important was the money earned the year we would cut the wood. “There were the flocks, people making charcoal, firewood...when someone came to the forest, the year for cutting was when they made a lot of money.” A third example offered by an interviewee is based on the explanation that expenses for cutting the wood are increasing and that the wood price is coming to a standstill.

“I remember before that if we wanted to make, for example, a shed, then we’d cut the forest, we’d cut such and such hectares, we’d make ends meet, and with that we’d build the shed. Nowadays? There’s no way you could even think about...
that... but well, you can do it if you’ve got a big area of... very big, huge. I also understand that the lumberjacks, well, every year they’ve got to pay more for the salaries and everything, and the prices of wood don’t change.”

Only one of the interviewed forest owners spoke favorably of his forest’s profitability, and he admitted that he used to obtain a generous amount of money from harvesting his forests and selling the wood. Even then, the forest owner revealed that he does not earn his living with his forests, so the profit margin has less of an effect on him.

“But it isn’t a business, like a business 100%. Because if it was a business 100%, we would have cut it all down to make the most out of it. We’ve cut it because you’ve got to cut the forests. But we don’t make our living from cutting down forests, do you see?”

Whereas in the past, the work was done by farm workers whenever possible and was relatively cheap and convenient, now the labor cost for forest work is extremely high. Some forest owners described the ease with which a farmer can do forest work. However, because there are currently far fewer people that actually work on farms, it is now much more difficult to find people that will do this type of forest work that complements farm work. Instead, specialized workers are required to do the job, and because they are specialists they are able to demand higher prices.

The decreasing significance of the forest is also noticed within the system of inherited wealth. One trend that exemplifies this is that many of the homes have such high economic value that the forests around them seem to have none. The profit from a house, either because it is sold or because it is changed into a secondary vacation home, far outweighs the profit that can be gotten from the exploitation of trees or pine cones or any other forest product. One forest owner expressed it the following way:

“We’re in a stage in the economy where what is profitable is to build a house and sell it for twice what you’ve paid, and not to go and spend a good day’s work picking up pine cones. Nobody wants to do a job like that. And by that, I mean that the economy is structured to favor big ventures over little ones.”

This loss of comparative value, especially in respect to houses, leads to disequilibrium in the real estate market. Some forest managers who would like to expand their properties are unable to do so because property values in the region, which are based on development value not the value of the forest, are too high. Whereas, on the one hand, such cases create a heightened interest purchasing real estate, and thereby stimulate demand; on the other hand, properties are often bought according to the value of the house, not the forest value, a trend that contributes to increases in unmanaged forests.

“It’s very difficult these days...It’s very difficult because...I don’t know, the neighboring properties, there are properties close by that although they’re... we have some of them leased...It’s people from outside who don’t work here and will never work them because they’re from Barcelona, doctors, teachers, builders or whatever, and I think that for these properties the worst danger is if they are bought by a notary or a chemist or...or the Duchess of Alba, to name someone, not if they’re really bought by a farmer who’ll work them. I think it’s sad but that’s the way things are heading. Because...we’re going into the whole speculation thing because there are people who are interested in that... They’re
snapped up, these farmhouses, not for the land but for the house, as normally they go together and because you can’t split them up...well...who knows? If it could be split up, well maybe...There are some nearby properties that we would be interested in buying— in fact, we’ve had it leased for a long time, because it belongs to people from Barcelona, but...\textsuperscript{114}

Q: You would buy a forest, not the house...
The forest and the fields. Not the house.

Q: You’ve got enough.
Yes, I’m not interested in it... And, well, if it was a bargain, yes, but it’s that...knowing a bit about the way the prices are going, you can’t even think about it.”\textsuperscript{115}

6.4.2 The forest is not profitable, according to three views

The lack of economical profitability of forest exploitation is a constant in most of the interviews. The price of wood and the cost of cutting are frequently mentioned topics. This is a common discourse among the forest owners that can be reduced to the phrase, “the forest doesn’t produce” (“el bosc no dóna” in Catalan),\textsuperscript{116} indicating that the forest is not sufficiently profitable. Broadly conceived, the expression has different meaning for forest owners that treat their forest as an enterprise from those who use it as a bank, both of which are distinct from those that view their forest property as an expense.

Within the concept of profitability are two, slightly different meanings: the first and more common usage describes the comparison of relative earnings to an initial investment, and the other involves an implied historical comparison, suggesting that selling wood in the current market is worth far less than it was before. When forest owners that implement intensive silvicultural methods speak about low profitability, they refer to the first type of profitability (earnings vs. initial investment). When forest owners or managers that practice a more limited form of silviculture mention the low profitability of a forest, they refer basically to the second type; that is, they speak in comparative terms. Although they do not invest very much money in the forest, the market price of wood has not increased in a long time, causing a general depreciation in the relative value of the forest. Profits from forest exploitation simply are not what they once were.

a. The Forest as enterprise

Related to the perception of the forest as a productive enterprise, the expression, “el bosc no dóna” (“the forest doesn’t produce”) is used to describe its lack of economic profitability. Assuming the forest’s condition as an object of enterprise, forest managers refer to the constant need to invest in the forest, weighing the potential rewards, in an informal cost-benefit analysis. In such a calculation, the difference between net profit and cost must be positive. In addition, the benefit gained forest management must also be compared with the sum of money that might be obtained from investing in another sector.

Therefore, if the income is slighter than the sum of the expense—taking into account the rates of interest, calculations of return on investment, etc.—or if the profit is slighter than the profit that could be gained in a different sort of investment, forest owners conclude that “the forest doesn’t produce,” or “the forest is not profitable”. As they consider the forest a form of enterprise,

\textsuperscript{112} DR 166
\textsuperscript{113} DR 165
\textsuperscript{116} Give (in Catalan, donar): means: to provide something cosa// to produce// To put something to someone’s reach so that he can take advantage of it.
Profitability (in Catalan, redibilidad): Representation of the relation between an invested capital and the net profit or yield it provides.
forest owners tend to exploit it and improve the yield, even if that amounts to more work and dedication on their parts. In this way, the forest is regarded in a manner that closer resembles a plantation than a natural, independent ecosystem.

In the following example, Xavier explains his conception of lack of economic profitability. Xavier implements a very intensive sort of silviculture and—despite his comments—he is one of the few forest owners in Catalonia that is able make a living exclusively from exploiting the forest.

“That forest of ours, that area here, is a forest that if you want to look after it well, you’ve got to pour a lot of money into it because they’re... Conifers, for example: because they’re often even-aged forests. What does that mean? That you clear-cut and then replant them, and you have to clear the undergrowth for five or six years, because it’s rich land and a lot of undergrowth springs up. Then you’ve got to thin it two or three times. You’ve got to prune it; normally, at least the first pruning—the low one. And, nowadays, if you do your calculations right, you see that the performance of the forest is probably negative, or as low as one or two percent if you take into account an exploitation like this, that it’s not worth doing”.

In the same interview, the forest manager also mentioned the physical conditions of the Mediterranean (“the Mediterraneity”), which leads to a low rate of growth in the forest. Coupled with the difficulty of operating machinery due to the steep terrain of the land, the natural conditions of the region have a negative affect on business.

“I’ve got one thing clear: we’re in a Mediterranean country, with Mediterranean climate and soil, aren’t we? This area of ours here is known as the richest, or one of the richest in Catalonia, with relief, with some very important slopes, here, too... I mean that, we’ll never be, in questions of production, can never reach what they have in other countries of Europe. I’m not talking about countries in other parts of the world, only countries in Europe... We can never manage to produce what they can with the beech forests in France, or Douglas in France, or beech in Romania, or acacia in Romania or Poland, or in Germany with Douglas, or spruce in Scandinavia, with much lower production costs for these because they can be mechanised 50 times more with processors, or if not with processor with self-loaders and skidders, and this and that... It’s impossible, we can’t even produce wood with diameter, or produce quality wood. So, if anyone knows how to make that profitable, in the global world we’re in , I think it’s perfect... fantastic! But, well, things look pretty bad to me... obviously”.

Even those landowners that made a significant profit from their forests and possess an entrepreneurial spirit have negative perceptions of the forest’s profitability, especially when they compare the profit with other sectors of the economy.

b. The Forest as a bank

For some forest owners, the forest serves as a bank, a reservoir in which money grows and is stored, with almost no effort. Even if it does not serve as a primary source of income, the forest could be harvested in a time of need or for an extraordinary circumstance (a wedding, new car, or a new granary). In this sense, the forest operates as a “life preserver” for the family. When forest owners that view the forest as this sort of resource say that “the forest doesn’t produce” or “the forest is not profitable,” they refer to the historical yield of the forest, the concern that the forest is less profitable than it once was.

117 JG 42
118 JG 283
These forest owners speak of profitability and lack thereof in abstract terms (perhaps, in some cases, simply repeating what others say), without assigning actual material or financial significance to the forest. In contrast to forest owners that professedly use the forest as an entrepreneurial venture, the forest owners that treat it as a bank refer neither to the yield, nor to the difference between cost and benefit, as they rarely invest in forest management. The following excerpt has been taken from a conversation in which Mercè discusses the lack of forest profitability.

After revealing that property taxes are low and that she does not employ any silvicultural work on her property, she counted tree harvesting among her earnings. When asked if she earned any money or if the forest cost her anything, she spoke of the “low comparative profitability” drawing a comparison with former profit margins.

“Q: There is one thing that I don’t understand. They say that the forest is not profitable – many owners say that, but you cut wood eight years ago...You made money, didn’t you?
Yes, yes, yes. It’s obvious. If you go cutting and...Let’s see, if, that...yes, they’re not profitable, but it’s better to have them. It’s what we were saying: they’re not profitable, but it’s good to have them. (...) years ago they were much more profitable. Then obviously, if you compare them, they’re not profitable. They’re not proportionally as profitable as they were years ago. Now you expect that what goes well, that’s good. Whatever. You’ve got to take it like that.”

One indication that wood exploitation is targeted in certain cases to cover some extraordinary expense is the fact that, in many interviews, the forest owners are able to recall what they bought or how they spent the money on large purchases such as cars, sheds, or house refurbishments.

c. The Forest as an expense
Aside from its function as a savings bank and an entrepreneurial venture, the forest also represents a significant financial expense for some owners, which is described as “having to put money in.” It is evident that forest owners view the forest as an expense when instead of speaking in terms of earning money, they instead talk about paying expenses to maintain forest management. Forest expenses, in this sense, can be represented in monetary terms, but also in terms of labor costs: the number of hours that the forest owner works in the forest for the purpose of generating money. For example, we spoke with one forest owner who was unable to spend time on the forest because he needed to commit himself to other, more profitable endeavors. “If I could, I’d like to thin the forest. What I was saying, it’s too thick... or clear the undergrowth. But what I’m saying is... you can’t. You can’t because it doesn’t give you anything.”

The basic difference between a commitment of capital that is termed an “investment” and an “expense” is the expectation of gain that forest owners hope to receive. When there is no financial expectation or if the returns are realized over a long period of time, the expenditure is considered as an expense rather than an investment.

“It’s an expense, it’s an expense! This year we must have spent €2 million or €2.5 million (pesetas)... because we’ve got a girl in the mornings who never lets anything slip by (laughs). Because I can’t even tell you how much it has cost to clean the pine forests. And if we didn’t have the forest, we’d have a bit more money [the interviewee refers here to doing the accounts very carefully].”
Some forest owners, although they have no financial expectations for the forest, are optimistic for future improvement. If such hopes are realized, what was initially considered an expense would be transformed into an investment, which would be inherited by the forest owner’s children or grandchildren. Money is spent on forest management in hopes that future generations will benefit from their sacrifices, but it is a long-term and very uncertain investment. The periods of return are long and there is a deep concern that the harvest will not be profitable when current owners decide what investments to make in the forest. The risk of forest fire also seems to influence the forest owners when they are required to decide whether or not to invest.

“Q: Do you feel bad about investing money in the forest?
No, I don’t mind it. What I’d like would be to see it grow faster and think that our children could make something out of what we’re doing. But the thing is that the forest around here... you say, "Well, who’s going to make anything out of that?" I don’t know, because... maybe our grandchildren...”

If the commitment of money is considered an expense, the decision to spend is influenced by the forest owner’s financial situation. The interview subjects are quick to admit that there are other living expenses that compete with the forest on the forest owner’s priorities (“we’ve got kids and a mortgage”)

Another related concern that is frequently mentioned is the possibility that residential development and town planning will re-zone forest land. In areas where rezoning is likely, forest managers determine forest management and improvement to be impractical. However, according to the responses of several interviewees, forest managers that subscribe to this school of thought can be inspired to devote resources to forest management either because of an ingrained social pride or out of a general concern for the forest’s well-being.

Though the two motivations are closely linked, the sense of social pride would probably be closer to an external acknowledgement about the work done, whereas the second reason – the concern over the wellness of the forest – is the fulfillment of a personal or internal moral rule, which is independent of any social obligation. Both concepts lend themselves to comparison with other quotidian actions. For example, it is common to keep flowers in the balcony; many people have their balconies full of flowerpots. However, just because having flowers on the balcony is an expense that people will buy new flowers and pots every year. In the same way, it doesn’t make any sense to calculate the cost of growing a small little vegetable garden in the backyard if it isn’t done out of necessity.

There are many comparable examples that would suggest that people spend money on forest maintenance for the same reasons that they spend money on home decorating and renovations and having their cars serviced. People do these things for various reasons, most of which can be grouped into the categories of social pride and personal pleasure. Although forest owners do not gain any advantage from eliminating prickly shrubs, the satisfaction that one might take from being complimented by the neighbors might be similar to receiving praise for the beauty of the rosebush on a balcony. Similarly, the anxiety that forest owners experience when the forest is very far from that ideal is comparable to the discomfort that many people experience living in an untidy house, or if the garden is littered with trash.

6.4.3. Strategies for making forest management economically viable

123 JF 172-175
124 PA, PF, JP
To improve financial conditions, forest owners seek more efficient and profitable methods of managing their forests by reducing costs, increasing income, or by receiving technical support from the government. Other methods include passive strategies, such as temporarily reducing overall forest management until conditions improve, or seeking an alternative source of income from the forest.

**Improving the economic yield of forest exploitation**

Forest managers who think that forest exploitation yield has decreased express the concern that wood prices have remained the same for the past 30 years while the prices of labor, fuel and transportation\(^{125}\) have all increased. To cope with the low economic yield of wood, forest managers use different strategies to make profits increase, most of which are implemented with the intent of increasing profit margins.

<table>
<thead>
<tr>
<th>Table 15</th>
<th>Strategies for improving the economic yield of forest exploitation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Improving the economical yield of forest exploitation</strong></td>
<td></td>
</tr>
<tr>
<td>Increasing the income</td>
<td></td>
</tr>
<tr>
<td>a) Increasing the price of wood</td>
<td></td>
</tr>
<tr>
<td>b) The discourse of externalities</td>
<td></td>
</tr>
<tr>
<td>Reducing expenses</td>
<td></td>
</tr>
<tr>
<td>c) Reducing investment costs</td>
<td></td>
</tr>
<tr>
<td>d) Requesting financial assistance from the government</td>
<td></td>
</tr>
<tr>
<td><strong>Strategies for increasing income and reducing expenses</strong></td>
<td></td>
</tr>
<tr>
<td>e) Technical innovation to reduce expenses or increase income</td>
<td></td>
</tr>
<tr>
<td>f) Expecting better times/seeking other sources of income</td>
<td></td>
</tr>
</tbody>
</table>

**Increasing the price of wood**

Increasing profit margins is considered to be an ambitious and difficult strategy because there are many unpredictable and uncontrollable factors. Increasing the price of wood is a factor that would consequently cause profit margins to increase, which has been discussed in political forums over the past few years. Although it is the topic of frequent discussion, one forest owner expressed skepticism when discussing the actual possibility of implementing this strategy: “If you know how to make timber prices go up, tell me, I’d love to do whatever I have to... Bah! There’s a lot of talk about this but it’s all foolishness.”\(^{126}\)

Nevertheless, forest owners do consider new technological innovations to be a potential source for increasing their income. In this sense, precious woods among wood products, and truffles among non-wood products, attract the interest of the forest owners that are looking for strategies to increase the profit margins of the forest. Even though they know that such markets do not currently exist, they see commercial opportunities for these products at a reasonable price. In addition, forest owners also consider ways of increasing the consumption of wood; for example, forest owners promote the use of wood for building and as a form of biomass to be used as a future source of energy.

**The externalities discourse**

The recognition that the public use of the private forests has increased in recent years is accompanied by worries on the part of forest owners about damage to the forest that will result from negligence. In addition, forest owners themselves feel increasingly marginalized as their status as proprietors is impeded upon. In the interviews there are multiple examples of activities that people do in privately owned properties.

Increased public use and the broader appreciation of the non-economical values of the forest are classified as externalities; benefits (or costs) that are not directly accounted for in an economical...
evaluation of the forest. This idea that forests produce goods and services that are not part of market considerations (the externalities), but that are nevertheless enjoyed by society is raised in several interviews, along with the idea that paying forest owners for these goods and services can contribute to defray the costs of forest management.

In the following excerpt, the concept is conveyed in just a few words by the forest owner, who describes the activities that are done in his property. He generally regards this sort of public use to be negative, as it is revealed by its qualification as “terrible,” and the fact that his permission is never requested is particularly bothersome because it implies that the forest owner’s rights to his property are not recognized. He receives economic compensation for the public goods he produces for society, and he receives this payment not “for doing nothing,” but instead as payment for the work he carries out in his property. He also considers the current subsidies system (which covers a percentage of the expenses) to be insufficient, and he believes that forest owners should be paid the expenses a bit extra so as to enable forest owners to earn a living from their activities.

“(The public use of the property) It’s terrible. It’s terrible, principally on this property on Montseny, but on the others too, the others too. From using all the methods you can imagine: on foot, on bicycle, on horseback, motorbikes, SUVs, quads, looking for chestnuts or mushrooms, hunting, fishing, to... The other day I found some... some cables set up, right amid the trees, at a height of, I don’t know, seven or eight metres, some cables set up, there, I don’t know what, they must have climbed up... Set up there without any kind of permission ... What I mean is... you find all sorts of things”.

Q: And do they ask you for permission to do things like that?
 Systematically no. Systematically no. We don’t say anything, as long as it isn’t something that looks organised. A mountain bike race, you say, “Well, you, listen, you haven’t told us anything”, no? But if it’s... You obviously don’t say anything, I think that all that should be compensated in somehow or other... Not that specific person, if you want, nor, nor,... but more society in general, society in general. And I’m not talking about putting new taxes, like they say sometimes. No, I don’t think that’s needed. No, it’s a question of priorities. To say, “Let’s see, listen, we’re going to... going to... do, do a kilometre less of motorway, eh?” That would be more than enough, with a kilometre of motorway there’d be enough to cover the expenses of all the forests in Catalonia, “let’s do a kilometre less of motorway this year, ok?, but let’s make these people look after these properties that the whole Catalan society benefits from, let’s make sure they can earn a living, you?” And I’m not talking about paying without doing anything, am I? Of saying: “Look!, we’re paying for this use we make of it.” No, I’m not saying that either, but up to a point it’d be logical. No, no... I’m talking about, what the heck, if you do a job, well, they give you a grant that covers your costs and that... you can earn, I’d even say a living, I dare to say that, no? Let them pay you..., perhaps 120% of the real cost of that job. As the manager that you have been, that you can earn a living thinning”.

Other forest owners discussed how the landscape benefits society, and even its role in mitigating carbon emissions. Some forest owners suggest various ways of possibly receiving compensation for the social benefits produced by their forests. Some of the solutions they suggest include: subsidizing the costs of management work, reaching agreements with other institutions on the maintenance of paths, or even placing the government in charge of forest management.

Reducing expenses

127 JG 273
128 JG 274-277
The other strategy for improving both the yield and profit of forest exploitation is to minimize expenses. Some forest owner’s have already departed from the traditional system of production in order to reduce their expenses. For examples of this phenomenon, we can look to the use of livestock to control vegetation in forests – in which case the so-called innovation actually involves reverting to the practices of previous generations – or thinning and clearing the forest more assiduously, which would reduce the frequency that they would have to “that they have to go into the forest” to do any work. However, although it can help to minimize costs, this new system of management, as the forest owner in the following excerpt admits, is not free from risk.

“Yes, yes, with criteria that is changing a bit, because in the past the custom was to leave it thicker than it’s left now…”

**Q:** And why has that changed?

In the even aged forests it’s a matter of cost. Before, like I said, labor was very cheap compared with the profits you got from the forest, and then...you thinned less because it wasn’t so important, right? “Let’s go and take out the few bad ones, shall we?” Always, when you thin, there’s a certain risk that the snow or the wind...can cause a bit of damage. But nowadays, you have to increase that risk a bit to cut back on costs. So that when you go past a certain point, that place is really a clearing; that means the least costs possible and that you don’t have to think about it again for at least another ten years. I go in here, I do it, and it’s ok; it increases the danger of snow or wind a bit, but it’s worth doing because it doesn’t usually cause any real damage.”

Forest owners plan for the future as if conditions will remain the same. Even forest owners that implement intensive silvicultural practices (as in the following example) are thinking of changing to more “extensive” systems and systems that are aimed only at extracting the wood that could yield a profitable return. In some other cases, they are considering seeking other sources of income, outside the forest. The strategy can thereby be understood as a transition from viewing the forest as an enterprise to understanding the forest as a bank or financial reservoir.

“If it doesn’t change, we have to look at changing the system. What I mean is... we won’t have as much income, but we’ll also cut back on expenses, do targeted forestry—that means to get the most out of what we can make a profit from. And that’s all; forget about clear-cutting conifers. Forget about pruning. Abandon the forest a bit and look for other sources of income, whether it’s rural tourism, or...whatever it is. Set up a shop in the village...I don’t know, to sell something or other, to look for other sources of income and have the forest like it is in other parts of Catalonia as something specific. To say “Hey: look at that! There’s that crazy person who wants to buy some beech wood.” So I cut some beech – cut any old way too. If things don’t change, a remedy is needed. If we have to stop clearing undergrowth, if it has to be done... to make specific use of it, which is really to take advantage of it, so that you can get a bit of money out of it. Change, change..”.

**Requesting financial assistance from the Government**

Petitioning for financial aid for the purpose of implementing silvicultural work is another way of reducing out-of-pocket expenses. For the majority of forest owners who understand how the process of financial aid works, if they have established contacts through which they can request aid, they will use them. However, as uncertainty still exists as to whether or not they will receive government aid, some forest owners decide to do the work regardless of the subsidy. Those that fall into this category are often the ones that carry out intensive silvicultural work, whereas others hinge their desire to conduct forest management on financial aid.
Results and Discussion

Technical innovation to reduce expenses or increase income
Innovation and seeking other financial alternatives on the property is another strategy that forest owners use to try to make ends meet. The main alternatives can be to cultivate precious wood species and the productive holm oaks that are used in truffle orchards. For forest owners that dare to try it, such as this following example, they view it as a long-term investment.

"The truth is, I like to try new things and I thought about it... And as we’ve got a quite a lot of land, I thought that... mortgaging two hectares to do an experiment like that could be investing in the future. And I also looked at as possible... like a plantation, in a few years’ time – not yet because they’re still too small – but I wanted to experiment with making a plantation where the animals could also go, something that had a double use, both for timber in the future and as a pasture."  

Expecting better times
Some forest owners are simply waiting for an increase in the price of wood. These owners remember the past, when wood was valued higher, and they think that perhaps if they wait for the price of wood to increase, their profits will increase as well. The following excerpt illustrates the decision not to cut, in hopes that better times will come. The forest owner discusses some coniferous reforestation projects that are reaching their turn (meaning that they should be undertaken based on the schedule of forest management). Because the income he expects to earn will not cover his own expenses, he decides not to do the work.

"I’ve been crunching the numbers, and there’s no way I’ll be able to cut anything. I might thin some areas more, but in the end, I’m not going to do any cutting. Because if I count the profit I make, after that I’ve still got to replant... if I add it all up now, it comes out in the red".

Searching for other sources of income
The profits generated by the forest harvesting are low. As a symptom of this, forest owners witnessing the decline of their purchasing power and standard of living, and, in response, they seek alternative sources of income or they devote more energy to their current occupations because it has become more difficult to make a living from the forest. In the following interview excerpt, the forest owner who was intent on reducing expenses also revealed his desire to continue looking for other sources of income, beyond the forest sector.

"...abandon the forest a bit, abandon the forest a bit, looking for other sources of income, be they rural tourism, whatever it might be, set up a shop in that village for... I don’t know, selling whatever, looking for other sources of income (...) "Look for... other systems for earning a living. So we’re doing other things that we hadn’t done up to now. Like doing some urbanizing things, some little flats and so on, to sell or to rent, doing outside cleaning work like... I don’t know, like, for example plots on housing estates, like protection strips for housing estates."

(...)
"At these times, the situation is very critical. I... don’t have any hopes that this will change, so, if it doesn’t change, I see it more abandoned than it is now..., already a bit into that process, in that process, or definitively in that process of, of looking for... other ways to, to earn a living, don’t you".

130 DR 132
131 JG 44, talking about a friend’s opinion.
132 JG 176
133 JG 189
134 JG 189
The pressure brought on by impending town planning, the temptation to sell a portion of the property, or even to convert the home into a tourist retreat are a few of the ideas that fledging forest owners concoct to supplement their income. Marco, a forest owner in Central Catalonia, expresses in a sentence an idea that is repeated in many interviews: “Rural tourism is more profitable than working with wood. 50,000 times more.”

**Summary**

There are a number of different conditions that factor into a forest owner’s financial situation, from making a living entirely off of the forest to spending money on it. Depending largely on finances, relative fertility of the forest is perceived in relation to either its own past productiveness or with the profitability of other industries. People that make no money from the forest can feel that it fits economically in their lives because they do not depend on it as a source of income. Alternately, others that make a great deal of money from the forest can view it as an unprofitable investment, only perceiving it in relation to former profits or other sectors of the economy. Therefore, the determining factor that influences a forest owner’s decision of whether or not to implement forest management is the perceived role of the forest in relation to that person’s financial situation.

The main ideas that lead forest owners to become involved in forest management regarding the economic point of view are:

- Thinking in forest as an enterprise is favourable to management when forestowners see the forest as a profitable activity.
- Thinking in forest as a bank is more favourable to management when forestowners see the possibility on making a good income from the forest in the future (for them of for the next generations)
- Thinking in forest as an expense is favourable to management when there are strong motivations to make them see management as something desirable.
7 Discussion

7.1 Placing this research in the context of existing literature

Issues of worldwide forest ownership are gaining influence and importance, and it is important to put this study in the greater context of existing literature on the topic. The bulk of literature on forest ownership has come from the United States, Canada, and Europe. Just few research has been published in other parts of the world as in Australia (e.g. Dole 1995; Wilson, Whitham et al. 1995; Race and Fulton 2000), New Zealand (e.g Wilson 1992), in Asia (e.g. Mahapatra and Mitchel 2001; Choi, Oh et al. 2004) or in Africa (e.g Deewes 1992; Owubah, Le Master et al. 2001). The low number of research studies that have been published in some of the areas-as it is the case of Oceania- can be partially explained, as Deane (2004) suggests, by the concentration of productive forests in state owned lands.

In Europe, the topic of forest ownership has become increasingly important in recent years, particularly in Scandinavia, and in Central and Western European nations. It is also worth noting that there are several highly relevant research studies that have never been published in English (e.g. Törnqvist 1995 only in Swedish; Suda, Beck et al. 2001 in German), as they were inaccessible to scholars that do not read those languages. It should come as a surprise, then, that existing research studies in the Mediterranean region of Europe are still few and scattered. In Spain, the first studies to address forest owners and forest ownership emerged within the past decade, and English publications are just now beginning to materialize (e.g. Marey, Crescente et al. 2002; Marey, Rodriguez et al. 2007; Montiel 2007; Rodríguez and Marey 2008).

Although studies in the field of rural sociology and agriculture extension have dealt for a long time with the human qualities of land owners, some of the first studies on forest ownership were written in the middle of the 20th Century. Most of those first studies from between 1940 and 1960 focused on the physical structure of properties (size, productivity, etc.) and the relation of those physical features to management and forestry techniques. In the 1950s and especially the beginning of the 1960s, some researchers (Stoddart 1942) stated the need for more research focusing on forest owners as individuals order to better understand his personal characteristics, objectives, interests and limitations (Keniston 1962).

The first research studies on forest ownership that were written in Europe and in other parts of the world focused on what was considered the main function of the forest: wood production (e.g. Eckmüllner 1950; see Kvarda 2004 for more examples in Austria). This interest in timber came as a result of vested interest of both private businesses and governments in ensuring timber supply and how to increase wood production, as it was an important source of raw material.

Research in the 1980s continued to focus timber management decisions, for the most part, and during that time forest owners that were not producing timber were seen as a problem (Kuuluvainen and Salo 1991). There was an effort to research timber logging decisions, and as a result, most mainstream literature from that era is related to the economics of wood production and how landowners make decisions about it. As Amacher and others (Amacher, Conway et al. 2003) highlight “aside from Faustmann, perhaps no other area of forest economics have been so widely studied as the behaviors on nonindustrial private forest owners”.

Different approaches to this field of study have been adopted, from statistical description of wide areas, to comparing the various characteristics and behavior of forest owners and their (e.g. Binkley 1981; Gedney 1983; Greene and Blatner 1986), and test of hypotheses have also been conducted. The two main theories developed in order to formulate and test hypothesis have been utility and profit maximization (Alig, Lee et al. 1990; Beach, Pattanayak et al. 2002; Amacher, Conway et al. 2003).
As society began recognizing goods and services produced by forests other than wood, research also included information about other possible objectives and motivations, which caused the shift from econometric studies that focus on profit maximization to the utility maximization (Amacher, Conway et al. 2003; Cubbage 2003). Some empirical studies have also found that non-timber management goals play an important role in the objective function maximized (e.g. Pattanayak, Murray et al. 2002).

Apart from the econometric studies, a great deal of important research in the field of sociology was also conducted. Not surprisingly, the behavior of non-industrial landowners has been one of the most frequently visited topics in forest economics, rural sociology, and policy research. (Amacher, Conway et al. 2004; Solberg and Tikkanen 2005). One particularly important body of work seeks to identify sociological factors associated with NIPF ownership. This line of research developed in the 1970s (Egan 1997) "and stemmed from the heightened awareness that forest landowners often hold land for non-timber benefits and embrace multiple ownership objectives" (Amacher, Conway et al. 2004). Studies based on the objectives and behavior of landowners instead of only timber management have grown in number since the 1980s (Bliss and Martin 1989; Lönnstedt 1989; Bourke and Luloff 1994; Egan and Jones 1995; Jones, Luloff et al. 1995; Barstad 1997; Kallio 1997; Ripati and Järvelainen 1997; Karpinnen 1998; Lister 1998; Rickenbach, Kittredge et al. 1998; Slee and Wiesum 2001; Conway, Amacher et al. 2003; Kvarda 2004; Ziegenspeck, Härder et al. 2004 among others)

There has also been a remarkable effort to construct different typologies of forest owners and categorizing them into groups and clusters. A high level of diversity has been achieved in the classifications (Schraml and Memmler 2005; Boon and Meilby 2007). Most of the typologies are based in quantitative survey data, and the groups are defined according different purposes (e.g. the differences in the objectives of the forest owners) (e.g. Kuuluvainen, Karppinen et al. 1996; Boon, Meilby et al. 2004; Ingemarson, Lindhagen et al. 2006; Marey and Rodriguez 2008), or socio-demographic data to identify and differentiate new kinds of landowners (e.g. Härder 2002; Hogl, Pregernig et al. 2003). Typologies have been criticized mainly for two main reasons: First, that the effects and relationships are not analyzed, and the second, that they do not contribute to the lack of valuable information that can be used to form policy (Hogl, Pregernig et al. 2005; Schraml and Memmler 2005; Emtage, Herbohn et al. 2006; Boon and Meilby 2007). In an attempt to overcome these limitations, several new studies are focusing more on policy implications. (e.g.Boon and Meilby 2007).

Forest policy tools such as cost sharing, taxation and technical assistance have also been analyzed and their impacts in behavior from an econometric approach (e.g. Ollikainen 1996; Amacher 1997) or also from wider sociological, policy science or cross disciplinary approaches have been studied widely (e.g. Bliss and Martin 1990; Butler, Tyrrell et al. 2007).

Regarding to the general approach, Deane (2004) noted that much of the literature that focuses on forest ownership is statistical, objectivist (or without recognizing subjectivity), positivist, and focusing on prediction and “reflecting a general comfort with naturalism” (e.g. Brazee and Amacher 2000). Deane also noted that much of the sociological research regarding behaviors (non-economical) has a strong empirical component. Often, the theoretical analysis is not as well described – at least in the published paper (Deane 2004). However, some theories highlight: Cultural theory (Thompson, Ellis et al. 1990), and also Planned Behavior Theory (Ajzen 1985; Ajzen 1991).

---

The range of policy tools that can be used to promote forest management is wide (e.g. Merlo and Paveri 1997; Le Master, Block et al. 2002; Schmithüsen 2003). One classification scheme involving policy tools that has been widely regarded is the one proposed by Vedung (1998), which distinguishes three kinds of instruments: regulatory tools, economic tools and information tools (sticks, carrots and sermon).

Regulatory tools: Regulatory tools that prescribe certain modes of behaviour through obligations and prohibitions.

Economic tools: The distribution (grants, subsides, cost sharing, etc) or the levy of material resources (taxes, charges, etc.).

Information tools: Tools and incentives that seek to influence people through transfer of knowledge, communication, persuasion, education, etc.

Most of the forest policy tools that are currently in use in Catalonia can be classified as regulatory instruments and economic instruments.

7. 2 Fulfilling a moral norm

As it might be expected, forest owners that have grown up on a particular piece of property typically have strong feelings of attachment to that environment. When a piece of property has belonged for centuries to a family, it tends to play an important role in the family identity, as Bliss and Martin (1989) also noted. The very idea of selling the property is not viewed as an option for many forest owners, even if the cost of owning the land becomes a significant burden. Similarly, the concept of the property as a central part of an inheritance or legacy is very powerful for many families.

This concept of patrimonial legacy has been described as “legacy” or “bequeathed value” in several published papers (e.g. Lönnstedt 1989; Boon and Meilby 2004; Butler, Tyrrell et al. 2007; Richter and Lewis 2007; Rodríguez and Marey 2008). However, the concept of legacy is used in a different manner in this paper; unlike the meaning of “bequeathed value” as it used in the microeconomic works, in these works the concept of bequeathing is mainly used to incorporate into the econometric functions the conditions under which money and timber inheritance occurs across generations (e.g Tahvonen 1998; Amacher, Koskela et al. 2002; Amacher, Conway et al. 2003).

There are also two significant unwritten moral norms that are important to landowners, the first of which is close to, “The family inheritance can’t be sold. It must be given to the children in the same way that my parent gave it to me.” The second norm reinforcing the first one: “The inheritance must be kept and bequeathed in the best possible condition.” (Tena 2006)

These norms are social or moral norms more than they are personal beliefs (Elster 1991) because they are formed by and shared by the members of the social group. However, these norms can also elicit powerful emotions, as breaking or violating them would cause an intense feeling of shame as Elster described in the Folk Theory, while maintaining the norm caused a sense of pride (Elster 2002). Although these inheritance norms are mainly found in forest owners that are inheriting property that has been passed down over centuries, it can also be found in landowners that have only recently bought property.

Policy implications

Land owners that have strong feelings regarding the concept of legacy and the moral norm are more likely to manage their forests. In this sense, Hardie and Parks (1996), Conway et al. (2003) and Ross-Davis et al. (Ross-Davis, Broussard et al. 2005) have documented that maintaining the viability of the property by land management by future landowners through
Results and Discussion

Inheritance may be a key to securing the continuity of the forest sector. Moral norms and rules that one feels an obligation to follow are intrinsic motivations (Frey 1997) that come from a need for self-determination (Deci and Ryan 2000). According to Boudon (1996) and Lindenberg (2001), when people act on the basis of a principle, moral norm, rule or other intrinsic motivation, they do not pursue external rewards beyond the personal satisfaction from fulfilling those perceived obligations. In the case of motivations caused by moral norms, the expectation of external tangible reward or money tends to reduce intrinsic motivation, whereas praise and other types of positive feedback tend to make it augment.

Economic incentives therefore do not seem to be an appropriate way of enhancing this moral norm. Forest owners that possess these types of feelings are responsive to social recognition of the moral rule and similar types of encouragement, which is why policy tools can be a useful means of reinforcing the other three key factors. However, informational tools can be an effective way of increasing social recognition. In this sense, Butler et al. proposes that media advertisement could be used to encourage people to keep family forests, emphasizing the value of becoming part of a venerable tradition instead of creating a new solution (Butler, Tyrrell et al. 2007).

7.3 Having an archetype to fit

Many of the forest owners that were contacted for this research have a mental model or archetype that dictates how a model forest should look. For many, this archetype was developed during childhood, but it continues for the rest of their lives to influence their preferences about forest management and about how a good forest looks like. Forest owners that grew up in particular regions tend to have a preference for the aesthetic character of the forests of their youth, even after they have moved away and matured.

Many similar examples can be found in existing literature on the subject. Kvarda, for example, conducted a set of interviews that were titled “agricultural” and “non agricultural forest owner” noted that forest owners without economic interest in the management of their forests wanted their forest to be “clean” and “to be maintained” (Kvarda 2004, page 463), showing that they have a model for how a forest should be. The same year, in a study on perceptions about forest wild fire, Carrol et al. noted that amenity migrants (part time-residents) were criticized by year-round residents because they believed that they were ignorant of forest ecology and fire danger. The forest model preferred by the amenity migrants – similar to the forests in the region where they came from – was considered by the full-time residents to be “unnatural” and “unhealthy” in this other region (Carroll et al. 2004). This example reinforces the idea that some landowners develop a concrete idea of their forest that can be maintained through life despite changing environmental surroundings.

This concept of a forest archetype is related to Bliss and Martin’s (1989) findings regarding ethnic, family and personal identity as a factors or motivations for carrying out forestry, the concrete image of how a forest “should be” contributes to the concept of family identity, but also to how one develops a personal identity.

From quantitative studies, the creation of a personal image of how a forest should look and the emotional attachment to that archetypical forest is a factor that has been more or less formed by “growing up on the property,” “inheriting the property,” and “living close to the property.” In the surveys where those variables where explored, growing up on the property, inheriting, and living nearby have been mostly correlated with a more active approach to forestry. The data and methodologies used in those research papers (mainly quantitative and oriented towards the construction of typologies) do explore whether the link between these factors and behavior relates to the creation of a archetype, as this and other qualitative studies suggest (e.g Bliss and Martin 1989; Carroll, Cohn et al. 2004; Kvarda 2004).
There are different philosophical and psychological models of the self and for understanding processes of identity formation (Taylor 1989). Debates within the fields of psychology, sociology, and philosophy reveal the complexity and multidimensionality of this subject (Lindsey 2001). Individuals need to feel secure in who they are in forming personal identities, and there is a need of experience oneself as a whole, as a continuous person in time rather than constantly changing (Laing 1969; Giddens 1991). Individuals therefore need a stable and constant sense of identity and self, including personal preferences, goals, and interests.

Most importantly, a developed identity is required in order to act; when individuals don’t know what to expect, they cannot relate ends and means, and they feel insecure (Mitzen 2006). Uncertainty is a feeling that all individuals instinctively are aware of. In a well known example, the ethnomethodologic theorist Garfinkle (1967) placed graduate students in a variety of situations – at a family dinner or in other everyday situations – and instructed them to violate social conventions behaving oddly (for instance, he instructed them to be extremely polite and use a very formal language in the family diner). He found from his research that when normal expectations are not met, common reactions demonstrate confusion.

Elsewhere it has been suggested that to a stable environment is required in order for people to feel secure and to act, which reinforces the notion that it is difficult for people to spontaneously defy an existing archetype. Douglas (1966), one of the main contributors to the cultural theory, stated that even in a constantly changing world, a stable world is constructed in depth and has permanence. When perceiving people take some “cues” and reject others, “the acceptable cues fits easy into the build pattern, ambiguous ones are liable to the threatened if they harmonize with the rest of the pattern but discordant cues tend to be rejected.”

Individuals are motivated to create cognitive and behavioral certainty, and individuals do so by establishing and following routines (Mitzen 2006). In the case of forest owners, that sense of cognitive certainty relates to how a forest should be and routines are linked to forest management. The creation of a personal model for how a forest should look and the establishment of steps towards achieving that archetype contribute to the formation of forest owners’ personal identities.

Policy implications

Policy tools that are intended to influence people through the transfer of knowledge, communication, persuasion, and education seem to be a good way of creating archetypes to help develop and change forest owners’ understanding of what a good forest is. This assumption is consistent with literature that emphasizes the ability of education and informative tools to help promote changes in landowner behavior.

Brunston and Reiters (1996, in Harmon et al 1997) noted that attitudes about timber harvesting were changed once information was provided. Bliss and Martin also noted that of all the incentives offered to NIPF owners, active managers placed the most value on technical assistance and information (Bliss and Martin 1990), even more than cost sharing (Jones, Luloff et al. 1995). The spread of information can also have an enduring affect on management, which is consistent with the idea that a new model is created and integrated into the identity of the forest owner. Informational tools can also help in developing archetypes among those forest owners that have been disengaged from forest management for long time. As Egan and Jones (1993) pointed out, although many land owners may have good intentions, the desire to do the right thing is not enough.

It can be said that the existence of an archetype that dictates how a good forest should look is a key factor in the decision of whether or not to carry out forest management. Many of forest owners develop forest models in childhood that continue for the rest of their lives, although some forest owners have lost the archetype altogether. The influence of the creation of a new
mental archetype is most likely to be done through informative tools such as the spread of knowledge, technical assistance, and the sharing of information rather than through economic instruments (carrots) or regulatory instruments (sticks).

### 7.4 Reducing risk of forest fire

There are existing studies that specifically deal with forest owner perceptions of wildfires (Gardner, Cortner et al. 1987; Beebe and Omi 1993; Winter and Fried 2000; Carroll, Cohn et al. 2004; Nelson, Monroe et al. 2004; Badia and Mira 2007), and most of them focus on the urban-forest interaction. However, literature about fire risk and risk perception – particularly the risk caused by natural hazards – is very rich, and it includes concepts that can apply to the case of wild forest fires and how forest owners perceive them.

Beck states the science determine risks and the population perceive risks (Beck 1992), which also means that risk assessment of laypeople is different from the risk assessment of experts. According to the research, it seems that personal experience with forest fire leads to increased awareness. That position is consistent with personal reports that experience (direct or indirect) with hazardous situations tends to increase the awareness and memorability of the risk (Kasperson, Ortwin et al. 1988). Kunreuther cites past experience as the most important factor in raising awareness about a hazard and willingness to adopt protective or preventive measures (1978; in Carroll, Cohn et al. 2004).

Local environmental threats alone do not necessarily trigger action (Turnquist 1994); in many cases, people want to believe that regardless of the danger at hand, their actions will have an effect in deciding the outcome. Similarly, forest owners in this research differentiate two kinds of fires: manageable fires (which are often small) and uncontrollable fires (which are much larger). These findings are consistent with the conclusions of Winter and Fried (2000) in the sense that people that believe that forest fires are random events that cannot be controlled might be less likely to take measures to reduce fire risk.

As Slovic (1987) pointed out, when a person has little ability to control the outcome of an event, the perceived risk is higher. Pijawka et al. (1987–1988) added to this idea that when a person believes that measures of control over the threat exist, the person will carry out risk-reducing measures (Pijawka, Cuthbertson et al. 1987–1988). The perceived ability to control risk is therefore a key element in the decision to take actions to take preventative measures (Baum, Fleming et al. 1983; Slovic 1987). The preventative measures taken by forest owners are mostly directed towards forest fires that they believe that they can control (the small ones, if any), while at the same time forest owners that believe that nothing can be done will take no action at all.

From this research, it does not seem that forest fire has enough influence enough to change the decisions about timber harvesting or planting among the land owners that make a living from timber sales. These findings are consistent with those of Carrol et al. (2004) in the sense that the threat of wildfire is not the primary factor dictating forest management decisions for many landowners and economic objectives – other than avoiding fire losses – are more often considered. In this study, forest owners whose primary source of income comes from the forest try not to think about forest fire because they can not live with the constant stress that comes with thinking about risk. This trend reflects the theory of cognitive dissonance (Gregory 1995), which suggests that when a hazard has become known and familiar, it becomes less threatening.

Forest owners whose primary source of income is not the forest but nevertheless view it in economic terms (the forest as a bank or forest as an expense, see pages 85-91) tend to “clean the forest” as a way of dealing with the danger of fire. Carrol et al. found a similar intention among some forest owners in their study: “They were interested in returning fire to its original role, in
part to “clean up the forest” and reduce the threat of large, catastrophic fires” (Carroll, Cohn et al. 2004, page 5). In that study it was also noted that elders tended to believe that “fires never got this big because in the past because people burned, which reduced fuels and resulted in smaller wildfires” (Carroll, Cohn et al. 2004, page 7). In the present study, participants express a similar perception regarding the increase of big fires due to the loss of certain activities, like collecting firewood.

Forest owners in both research projects believe that keeping the forest “clean” will succeed in reducing the risk of forest fire, as they logically conclude that less fuel will lead to less risk. However, many forest owners express doubt that such measures the utility are useful in guarding against large forest fires. The same desire to have a “clean” forest is found in areas where forest fire is not a serious concern (e.g. Kvarda 2004; Nelson, Monroe et al. 2004). This could relate to Douglas’s observation that there is a shared belief that “sacred things and places are to be protected from defilement,” which has roots in the Judaeo-Christian culture (1966, page 1). Therefore, concepts of dirtiness and filth are not so much a reflection of hygienic values (or a safer structure in this case), but instead they reveal the need for stability and permanence in one’s material surroundings.

Policy implications

Last decade, there was a public debate about the model used to prevent forest fires in terms of whether to focus public efforts on suppression efforts or preventative measures. Tábara et al report how the rhetoric of the Catalan government in relation to forest fire has changed, underscoring the importance of structural measures such as territorial planning (Tábara, Saurí et al. 2003). Several authors, such as Tábara et al. (2003), support adopting preventative measures instead of focussing on suppression. Many forest owners control the shrubs on their property in order to decrease the property’s vulnerability to wildfire. And they are doing a sensible think, according to the experts. A recent study of forest stands found that the probability of forest fire increased with lower altitudes (influencing evapotranspiration and species), smaller diameters, larger basal areas, higher proportion of coniferous species and increasing variation in tree diameter (González, Palahí et al. 2006).

In actuality, the incentive to “clean” forests is generated through cost sharing, and it is the main – and often the only – silvicultural activity conducted by the forest owner. Considering that perceptions of forest owners can be different than those of experts (Beck 1992), future fieldwork should seek to determine which areas are central to the fight against the forest fires according to the experts – for instance, high vulnerable areas or areas suitable as a forest fire break (Tábara, Saurí et al. 2003) – and concentrate efforts (specially publicly funded efforts) in those areas that are of strategic importance to forest fire suppression.

Cheng (2002) noted that responding to wildfire risks is basically a social process that involves a mix of scientific information and personal attitudes. The influence of both mass media and interpersonal channels (Coleman 1993) should be taken into account in the design of forest owner-oriented information tools that aim to encourage or discourage shrubs suppression as a means to decrease wildfire risk.

7.5 Fitting one’s economy

Research data shows that the most important factor to forest owners regarding forest management is that forests meet their economic expectations and fit in their economy (whenever forest management activities become an expense or an income). Views among forest owners of forest management economics range from perceiving the forest as an enterprise, viewing the forest as a bank that will provide money if required, to seeing the forest as an
Results and Discussion

There is a wealth of literature on econometric studies that analyze the decision making and behavior of forest owners, most of which focuses specifically on harvesting and planting. This literature seeks to construct microeconomic models to explain landowners’ behavior and management based “on market, owner, policy and resource characteristics” (Beach et al. 2005).

In most of the microeconomic models that have been developed, forestry is seen as a “production activity” (Beach et al. 2005, page 267), and it involves the selection of a set of inputs that produce desired outputs. Forest output can at the same time be considered an input, in the sense that it is also production of human wellbeing (e.g. Binkley 1981; Pattanayak, Murray et al. 2002). In the analytical models used, two basic theories are used to explain forest owners’ behavior: profit maximization and utility maximization. As Beach et al (2005) define them, “profit maximization essentially assumes that forest owners make decisions that will maximize the level of discounted profits over time without considering the benefits associated with non-market goods produced by their forests. Utility maximization, however, recognizes that forest owners may gain non-pecuniary benefits such as aesthetics, recreation and wildlife habitat from the forest stands on their land in addition to the value of their timber.”

The increased recognition of the forest’s many functions has led to increased research in the field of utility maximization, and results of more recent papers suggest that forest owners seek utility maximization rather than profit maximization rather than (e.g. (Pattanayak, Murray et al. 2002). From our research results, we can’t agree with the notion that the goal of forest owners is to maximize profit, and we must agree with the idea that factors other than profit-generating have an affect on investment decisions (Pattanayak, Murray et al. 2002). It would also be interesting to know if these same forest owners thought that they were investing money or just spending it, as some of the participants in the present research stated.

To say “fitting one’s economy” could somehow be understood as a lay term expressing a utility function. The way that landowners perceive their forest influences what factors should be included in these utility functions. Therefore, when the forest treated as an enterprise and the owner is a farmer, in the utility function it have to be considered how the owner distributes his time to different tasks (agriculture, cattle, forest, etc.). In contrast, when the forest is seen as an expense, the utility function should include other possible activities where the forest owner could expend his or her time and money (travel, cars, etc.). In the case of a forest owner that views the forest as a sort of savings account, leisure and aesthetics should be included in the forest’s utility function.

The results are also consistent with the literature stating that forest owners’ decision making processes are not based exclusively on economic profit ((Binkley 1981; Boyd 1984; Newman and Wear 1993; Pattanayak, Murray et al. 2002; Beach, Pattanayak et al. 2005). The results of the present research also agree with the results of other authors that have found in their researches that some forest owners do not view their forest as an entrepreneurial activity (e.g. Carroll 2004, Bieling 2004).

When a forest owner does not view his or her forest as an enterprise, it becomes difficult to explain their behavior with economic calculations. Similarly, our results are in agreement with other studies that note the other motivations besides economics for managing the land, such as aesthetics, leisure, identity, hobby, or inheritance. (e.g. Bliss and Martin 1989; Zhang, Zhang et al. 2005). The results of this study demonstrate that decisions are not only based in economic factors; it is instead a multicriterial decision in with economic is only one of the criteria.

Policy implications

Economic tools have been designed from an economic point of view and oriented to improve property through silvicultural acts, such as thinning (Table 18). In this context, economic tools are effective when forest owners understand investments in silvicultural treatment to be an
investment in the future. To forest owners that see forest as an enterprise, cost sharing is an appropriate tool, as cost sharing brings them greater rewards. In fact, asking for grants (cost sharing) is one of the more frequently mentioned strategies, and it fits in the strategy of requesting financial assistance for silvicultural work.

However, when forest owners view the forest as a bank and they are not planning to make any investment, then cost sharing doesn’t seem as effective because it implies that the forest owner must make anyway an out of pocket expense. Therefore, if the forest owner does not see the need for the implementation of silvicultural practices (or any other activity) for other reasons, the existence of cost sharing alone probably won’t be enough encouragement.

When forest owners view the forest as an expense, they already perform the activities per se, because they think they have to, or they want to. In this case, just when the activities eligible for economic incentives fit in what they want to do, they will be encouraged by means of this policy tool.
IV CONCLUSIONS

8 Conclusions

All of the forest owners interviewed for this project were private individuals whose common bond was the intimate relationship that each of them have with the Mediterranean forest. The forest owners that were studied for this paper each had a different approach to forest management, and they made decisions regarding their property based on family history, financial conditions, perceptions of themselves, and the particular conditions of the forest at a given moment.

There are four, often interrelated key factors or driving forces that influence the perceptions and decision-making processes of landowners in forested regions: the forest owner’s fulfillment of a moral norm, having a model or standard of forest management to fit, the belief that risk of fire can be controlled with silvicultural management, and the need to conform the needs of the forest to the forest owner’s financial situation. Decisions are not made on the basis of only one of these driving forces; instead, willingness to participate in forest management more often generates from a unique combination of these four variables.

Fulfilling a moral norm: The moral norm that many forest owners subscribe to is derived from a custom of caring for and maintaining the family’s patrimony, and it is often passed down across generations from parents to children. It exists for many as a sort of intergenerational commitment among family members, and it can serve as an expression of the type of worldview of a particular family. That sense of moral obligation to the forest is not limited to family traditions though; in many cases it can stem from personal beliefs regarding the responsibility that individuals feel towards the natural world and conservation efforts. This moral norm is extremely powerful in some cases, but in others it can be weak or non-existent. Believing and following this moral norm favors forest owners that engage in forest management.

Having an archetypal model to fit: While the moral norm is a sort of model that many forest owners base forest management decisions on, many forest owners also base their decisions on an aesthetic model (how the forest should look) of the forest that is established over time. Aesthetic models of the forest are very personal, and they are typically formed by what is familiar, especially for those forest owners that are native to forest regions, and also by the forest education received. People that are raised in the familiar type of forest environment tend to view that particular type of forest as the way a forest should look. Therefore, it is typical for forest owners to continue the forest management practices of their parents or wherever they have spent the most amount of time. Owning a forest that is far different from that set archetype can cause feelings of discomfort. Having an archetype to fit increases the possibilities that the forest owner engages in forest management.

Reducing risk of forest fire through management: Another influence that factors into the decision of whether or not to manage forests is the desire to protect property against forest fires. Forest fires pose a threat in the Mediterranean region, and they can cause serious damage to forest property. It is known by many landowners that unmanaged, wild forests are more vulnerable to fire, and in many cases, awareness of the danger posed by fire is enough to motivate forest owners to clear brush and manage their land. Forest owners subscribe to this logic to different degrees; some landowners discriminate between small forest fires that can be controlled through silviculture and larger forest fires. Depending on and individual view of the relation between management and the damage caused by forest fires, landowners will be more or less likely to manage the forest.
Fitting one’s Economy: Forest management must conform to the financial situation of the landowner, and due to the varying financial conditions of landowners, the implementation of forest management and the rewards gained from the forest can take different forms. This can range from reaping high profit margins from a small plot of land to gaining low profitability per hectare on a much larger scale; or it could simply mean that the amount of capital committed is within the financial mean of the forest owner. Forests can be viewed as a form of capital – as the savings of the family – but it can also be viewed as an expense. None of these three perspectives leads directly to a higher involvement in forest management; what seems more important is that forest economy fit a forest owner’s expectations and personal budget.

Forest management and silvicultural decisions are generally the product of several of the four factors that emerged from this research and in many cases all of them. For landowners in forested regions, the question of how to manage the land is a complex one because it involves economic, psychological and emotional influences and motivations, and they are often developed over more than one person’s lifetime. Therefore, it is important that policy tools capture and adapt to that complexity, acknowledging and working in accordance with these diverse and varied factors.
## V. ANNEXES

### ANNEX 1. Interviewees

Table 16: Some characteristics of forest owners and other persons interviewed

<table>
<thead>
<tr>
<th>Code</th>
<th>gender</th>
<th>age</th>
<th>Forest-agriculture education</th>
<th>Main activity</th>
<th>Kind of acquisition</th>
<th>of Living in the property</th>
<th>Forest fire experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>M</td>
<td>60-70</td>
<td>No</td>
<td>Other</td>
<td>Bought</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>AC</td>
<td>M</td>
<td>70-80</td>
<td>No</td>
<td>Other</td>
<td>1-b</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>AD</td>
<td>F</td>
<td>20-30</td>
<td>No</td>
<td>Other</td>
<td>1-b</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>AM</td>
<td>M</td>
<td>60-70</td>
<td>No</td>
<td>Other</td>
<td>Short inheritance</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>AN</td>
<td>F</td>
<td>20-30</td>
<td>Yes</td>
<td>A</td>
<td>Bought</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>AS</td>
<td>M</td>
<td>50-60</td>
<td>No</td>
<td>A</td>
<td>Inherited</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>AV</td>
<td>F</td>
<td>20-30</td>
<td>No</td>
<td>Other</td>
<td>Inherited</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>BR</td>
<td>F</td>
<td>40-50</td>
<td>No</td>
<td>Other</td>
<td>Bought</td>
<td>Yes</td>
<td>?</td>
</tr>
<tr>
<td>CH</td>
<td>M</td>
<td>30-40</td>
<td>No</td>
<td>A</td>
<td>Bought</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CI</td>
<td>M</td>
<td>30-40</td>
<td>No</td>
<td>Other</td>
<td>Inherited</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>DR</td>
<td>F</td>
<td>30-40</td>
<td>Yes</td>
<td>A</td>
<td>1-b</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>EC</td>
<td>M</td>
<td>40-50</td>
<td>?</td>
<td>A</td>
<td>Short inheritance</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>ER</td>
<td>M</td>
<td>30-40</td>
<td>Yes</td>
<td>A</td>
<td>Inherited</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>EV</td>
<td>F</td>
<td>20-30</td>
<td>No</td>
<td>Other</td>
<td>Short inheritance</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>EV</td>
<td>F</td>
<td>20-30</td>
<td>Yes</td>
<td>Other</td>
<td>Inherited</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>FF</td>
<td>F</td>
<td>65</td>
<td>No</td>
<td>A</td>
<td>Inherited</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>FP</td>
<td>M</td>
<td>40-50</td>
<td>Yes</td>
<td>A</td>
<td>Inherited</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>FV</td>
<td>M</td>
<td>60-70</td>
<td>No</td>
<td>A</td>
<td>Inherited</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>IG</td>
<td>M</td>
<td>40-50</td>
<td>No</td>
<td>A</td>
<td>Inherited</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>JA</td>
<td>M</td>
<td>30-40</td>
<td>No</td>
<td>Other</td>
<td>Inherited</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>JB</td>
<td>M</td>
<td>60-70</td>
<td>No</td>
<td>Other</td>
<td>Others</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>JC</td>
<td>F</td>
<td>15-20</td>
<td>No</td>
<td>Other</td>
<td>Inherited</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>JF</td>
<td>M</td>
<td>65</td>
<td>No</td>
<td>A</td>
<td>Inherited</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>JG</td>
<td>M</td>
<td>40-50</td>
<td>Yes</td>
<td>A</td>
<td>Short inheritance</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>ILL</td>
<td>M</td>
<td>40-50</td>
<td>Yes</td>
<td>Other</td>
<td>Inherited</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>JM</td>
<td>M</td>
<td>30-40</td>
<td>?</td>
<td>A</td>
<td>Inherited</td>
<td>Yes</td>
<td>?</td>
</tr>
<tr>
<td>JO</td>
<td>M</td>
<td>40-50</td>
<td>?</td>
<td>A</td>
<td>Inherited</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>JP</td>
<td>M</td>
<td>30-40</td>
<td>No</td>
<td>Other</td>
<td>Short inheritance</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>JR</td>
<td>M</td>
<td>60-70</td>
<td>Yes</td>
<td>A</td>
<td>Inherited</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>LA</td>
<td>F</td>
<td>40-50</td>
<td>No</td>
<td>Other</td>
<td>Short inheritance</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LC</td>
<td>F</td>
<td>20-30</td>
<td>Yes</td>
<td>Other</td>
<td>Inherited</td>
<td>no</td>
<td>Yes</td>
</tr>
<tr>
<td>LJ</td>
<td>M</td>
<td>30-40</td>
<td>No</td>
<td>Other</td>
<td>Short inheritance</td>
<td>no</td>
<td>No</td>
</tr>
<tr>
<td>MC</td>
<td>M</td>
<td>30-40</td>
<td>No</td>
<td>Other</td>
<td>1-b</td>
<td>yes</td>
<td>Yes</td>
</tr>
<tr>
<td>MT</td>
<td>F</td>
<td>30-40</td>
<td>No</td>
<td>Other</td>
<td>Inherited</td>
<td>no</td>
<td>Yes</td>
</tr>
<tr>
<td>MV</td>
<td>M</td>
<td>15-20</td>
<td>No</td>
<td>A</td>
<td>Inherited</td>
<td>yes</td>
<td>Yes</td>
</tr>
<tr>
<td>OF</td>
<td>M</td>
<td>30-40</td>
<td>Yes</td>
<td>Other</td>
<td>Inherited</td>
<td>no</td>
<td>No</td>
</tr>
<tr>
<td>PA</td>
<td>M</td>
<td>40-50</td>
<td>No</td>
<td>Other</td>
<td>Bought</td>
<td>no</td>
<td>Yes</td>
</tr>
<tr>
<td>PB</td>
<td>F</td>
<td>50-60</td>
<td>No</td>
<td>Other</td>
<td>Inherited</td>
<td>no</td>
<td>Yes</td>
</tr>
<tr>
<td>PF</td>
<td>M</td>
<td>30-40</td>
<td>Yes</td>
<td>Other</td>
<td>Inherited</td>
<td>no</td>
<td>No</td>
</tr>
<tr>
<td>PV</td>
<td>M</td>
<td>40-50</td>
<td>No</td>
<td>A</td>
<td>Inherited</td>
<td>yes</td>
<td>No</td>
</tr>
<tr>
<td>RC</td>
<td>F</td>
<td>40-50</td>
<td>No</td>
<td>Other</td>
<td>Bought</td>
<td>yes</td>
<td>No</td>
</tr>
<tr>
<td>RS</td>
<td>M</td>
<td>20-30</td>
<td>No</td>
<td>Other</td>
<td>Inherited</td>
<td>no</td>
<td>Yes</td>
</tr>
<tr>
<td>SC</td>
<td>F</td>
<td>&gt;70</td>
<td>No</td>
<td>A</td>
<td>Inherited</td>
<td>yes</td>
<td>Yes</td>
</tr>
<tr>
<td>TB</td>
<td>F</td>
<td>40-50</td>
<td>No</td>
<td>Other</td>
<td>Inherited</td>
<td>no</td>
<td>Yes</td>
</tr>
<tr>
<td>XC</td>
<td>M</td>
<td>50-60</td>
<td>Yes</td>
<td>Other</td>
<td>1-b</td>
<td>no</td>
<td>Yes</td>
</tr>
<tr>
<td>AL</td>
<td>M</td>
<td>30-40</td>
<td>Scientist</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>M</td>
<td>30-40</td>
<td>Scientist</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**M:** Male, **F:** Female, **A:** Agrarian activity (crop, cattle or forest), **I+B:** Partly inherited and partly bought, **Short inheritance:** The property is not belonging to the family since many generations. **?:** Unknown.
ANNEX 2: Situational map

Table 17: Abstract situational map. Ordered version.

<table>
<thead>
<tr>
<th>INDIVIDUAL HUMAN ELEMENTS/ACTORS</th>
<th>NON HUMAN ELEMENTS ACTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest owners.</td>
<td>Forest fire suppression technologies.</td>
</tr>
<tr>
<td></td>
<td>Forest fire prevention techniques.</td>
</tr>
<tr>
<td></td>
<td>Knowledge on forest management.</td>
</tr>
<tr>
<td></td>
<td>Mediterranean climatic and natural conditions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COLLECTIVE HUMAN ELEMENTS/ACTORS</th>
<th>IMPLICATED/SILENT ACTORS/ACTANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Administration</td>
<td>Users of the forests</td>
</tr>
<tr>
<td>Forest ownership council</td>
<td>Forest Scientists and consultant</td>
</tr>
<tr>
<td>Associations against forest owners</td>
<td></td>
</tr>
<tr>
<td>Forest owners associations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISCOURSE CONSTRUCTIONS OF INDIVIDUAL AND/OR COLLECTIVE HUMAN ACTORS</th>
<th>DISCOURSE CONSTRUCTIONS OF NONHUMAN ACTANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest management is desirable.</td>
<td>Less fuel in the forest leads to less risk of wild forest fire.</td>
</tr>
<tr>
<td>Forest management decreases the fuel ladder and the risk of wild forest fire.</td>
<td>Silviculture leads to profitable use of forests</td>
</tr>
<tr>
<td>Forest does not provide (economic income).</td>
<td></td>
</tr>
<tr>
<td>Forest provide externalities.</td>
<td></td>
</tr>
<tr>
<td>Moral rule to keep the patrimony.</td>
<td></td>
</tr>
<tr>
<td>Forests belong to the entire society</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLITICAL/ECONOMIC ELEMENTS</th>
<th>SOCIOCULTURAL/SIMBOLIC ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest law</td>
<td>Society modernization (change in inheriting)</td>
</tr>
<tr>
<td>Existing forest policy tools (grants, laws, etc) since 1990s</td>
<td>Forest management as a source of income</td>
</tr>
<tr>
<td>Inheriting laws</td>
<td>Forest management as an expense</td>
</tr>
<tr>
<td>Environmental regulations</td>
<td>Forest as a legacy/patrimony</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEMPORAL ELEMENTS</th>
<th>SPATIAL ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crisis in the price of wood since 1970</td>
<td>Forests</td>
</tr>
<tr>
<td>Increase in the prize of houses since 1995</td>
<td>Variations in species according climate and soil</td>
</tr>
<tr>
<td>Increase in big forest fires occurrence since 1995</td>
<td></td>
</tr>
<tr>
<td>Increase in social use of forests since the 1970</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAJOR ISSUES/DEBATES</th>
<th>RELATED DISCOURSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to property</td>
<td>Crisis of the rural world</td>
</tr>
<tr>
<td>Public use of forest</td>
<td>Externalities</td>
</tr>
<tr>
<td>Effectiveness of measures against forest fires</td>
<td></td>
</tr>
<tr>
<td>Forest owner as a guardian of the landscape</td>
<td></td>
</tr>
<tr>
<td>Strategies for fire suppression</td>
<td></td>
</tr>
</tbody>
</table>
ANNEX 3: Forest policy tools

The current situation of the forest policy tools in Catalonia is summarized in the following table:

<table>
<thead>
<tr>
<th>Policy Tool Type</th>
<th>Instrument</th>
<th>Target</th>
<th>Direct Exclusions</th>
<th>Indirect exclusions</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information instruments (advice and information)</td>
<td>Advice through the Gov technicians and wards</td>
<td>All forest owners</td>
<td>-</td>
<td>Those who do not go to government offices or do not live on the land</td>
<td>Very weak (change in government structure)</td>
</tr>
<tr>
<td>Economic Instruments</td>
<td>Grants (normally cost-sharing). See table 18</td>
<td>Forest owners</td>
<td>Forest owners with less than 5 ha.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The subsidies cover a variable percentage of the activity, as they can cover anywhere from 20% to the entire cost of forest work (in the case of forest management plans). Ninety percent of the silvicultural forest work is covered for forest that is considered to be a priority by the government, and up to 60% of the rest of the forest is covered by subsidies.

In general, these subsidies benefit the forest associations, enterprises and individuals, local entities that own forest property, legally constituted forest owners associations, and individuals and enterprises who support the financial charges from investments and expenses of the subsidized activities. In each chapter, the possible beneficiaries are listed according to the purpose of the investment. However, they all share a common obligation to respect the condition of forest land for at least five years after having received a subsidy, or to continue the forest management work for five years after having received the subsidy.
### Table 19: Identification and description of the line of grants from the Catalan government for forest management

<table>
<thead>
<tr>
<th>Legal Basis</th>
<th>subject of the grant</th>
<th>VALID Actions FOR GRANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAH/137/2007, 26th April, under which the bases for the grants for financing action in protected natural areas in Catalonia are established.</td>
<td>To finance activities and investments in protected natural areas in Catalonia: the areas of the PEIN (Catalan Plan for the protection of sites of special interest), natural areas for special protection and areas that make up the Natura 2000 Network.</td>
<td><strong>Group 1.</strong> Actions for maintenance and investment in buildings and equipment, and actions for forest clearing and environmental education.</td>
</tr>
<tr>
<td>MAH/1632/2007, 28th May, under which the bases for the grants for drawing up and revising the technical plans for forest management and improvement are approved and the period for requesting these in 2007.</td>
<td>To give technical support for drawing up and revising the (Forest Management Plan) corresponding to privately-owned forest properties.</td>
<td><strong>Group 2.</strong> Managing habitats.</td>
</tr>
<tr>
<td>MAH/586/2006, 13th December, under which the bases for the grants for sustainable forest management are modified and the call for 2007 is published.</td>
<td>To promote sustainable development of forestry and the protection and improvement of forest resources.</td>
<td><strong>Group 3.</strong> Investments in protection, restoration and improvement of the natural patrimony. <strong>Group 4.</strong> Investments in ordering the public uses and the diffusion of environmental values.</td>
</tr>
<tr>
<td><strong>MAH/1632/2007, 28th May, under which the bases for the grants for drawing up and revising the technical plans for forest management and improvement are approved and the period for requesting these in 2007.</strong></td>
<td><strong>Group 2.</strong> Managing habitats.</td>
<td></td>
</tr>
<tr>
<td><strong>MAH/586/2006, 13th December, under which the bases for the grants for sustainable forest management are modified and the call for 2007 is published.</strong></td>
<td><strong>Chapter 2.</strong> Extension, protection and improvement of the forest area.</td>
<td></td>
</tr>
<tr>
<td><strong>MAH/137/2007, 26th April, under which the bases for the grants for financing action in protected natural areas in Catalonia are established.</strong></td>
<td><strong>Chapter 3.</strong> Prevention of forest fires.</td>
<td></td>
</tr>
<tr>
<td><strong>MAH/1632/2007, 28th May, under which the bases for the grants for drawing up and revising the technical plans for forest management and improvement are approved and the period for requesting these in 2007.</strong></td>
<td><strong>Chapter 5.</strong> Transformation and commercialisation of forest products. Forest processors and haulers as well as adaptations and complements.</td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES


Atkinson, P., A. Coffey, et al. (2003). Key Themes in Qualitative Research: Continuities and Change. Walnut Creek, C.A, AltaMira.


References


References


Dole, A. (1995). The economics of private forest management unifying the Faustmann model and nonindustrial private forest management models. Nedlands, Australia, University of Western Australia.


References


References


References


References


