Systems of Land Registration

Aspects and Effects

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Systems of Land Registration - Aspects and Effects

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en

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There's more to see than can ever be seen
More to do than can ever be done
There's far too much to take in here
More to find than can ever be found

from the song Circle of Life
of the *Lion King Soundtrack*
(lyrics by Tim Rice)

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PREFACE AND ACKNOWLEDGMENTS

Already during my studies, especially at the (then) Faculty of Geodetic Engineering, I was interested in land registration (and cadastres), thanks to the lectures of prof.dr.ir. M.J.M. Bogaerts, prof.mr. P. de Haan, and prof.mr.ir. J.L.G. Henssen. This interest continued in the early days of my work at the same Faculty (first as a research assistant, later as an assistant professor). Not only through literature, but also through visits to offices and talks with staff of land registration authorities in several (European) countries, my basic knowledge of the topic grew.

Concentrating on materials in the English language I was struck by the often depicted black and white picture of “title versus deeds”, and the apparent lack of understanding of continental European systems by many Anglo-Saxon writers. My first, small attempts to express this came with my contribution on issues of land registration and cadastres to the 1992 LIS course for Central Europeans in Warsaw and my poster paper for Commission 7 at the 1994 FIG Congress in Melbourne on ‘improved registration of deeds’. Inspired by that 1994 congress and the summer course ‘Cadastral Information Management’ I helped organize together with the ITC the same year, I started to think about a PhD topic in the field of land registration.

Shortly after writing down the first ideas on this, I unexpectedly found myself as a consultant in Moldova via ILIS-Nedeco for the World Bank, with prof. G. McGrath (now retired from Queens University, Kingston, Canada) as an inspiring team leader. After I returned from that assignment, I had deepened my understanding of land registration and had got a better idea of my PhD topic as well. In the meantime the Dutch Agency for Cadastre and Public Registers (now called Dutch Cadaster and Land Registry Agency) had offered to second one of its employees for two years to our department to take over my day-to-day work, so I could work on a PhD. From early 1995 till late 1997 I have been able to devote over half of my time to my PhD, since then it has been much harder to find the time for completing it. In addition to my promoters, prof.dr.ir. Theo Bogaerts and prof.dr.mr. Jitske de Jong, I was inspired by discussions on methodological issues with prof.dr. Paul van Schilfgaarde (Technische Universiteit Delft), prof. Erik Stubkjær (Aalborg Universitet, Denmark) and prof.dr. Andrew Frank (Technische Universität Wien, Austria).

Because of the topic I chose, I had to do a lot of traveling to complete the case study which included three foreign countries (Indonesia, Austria and Ghana). Many people in these countries were willing to assist me in my research and supplied me with valuable information, sometimes in writing, often during discussions. I would like to thank all of them, by specifically thanking ir. Waljiyanto (UGM, Yogyakarta, Indonesia), Dipl.Ing. Gerhard Muggenhuber (BEV, Vienna, Austria) and prof.dr. Kasim Kasanga (UST, Kumasi, Ghana). I thank prof.dr. Alec McEwen (Professor Emeritus of the University of Calgary, Canada) for reviewing and improving the use of the English language in the report and Axel Smits (Technische Universiteit Delft) for improving the graphical quality of the figures

In addition to the research travels I returned to Moldova as a consultant several times (totaling 4 months during 8 trips), meeting other consultants, including two who had recently completed PhD studies on related topics (Dr. David Palmer (now at FAO in Rome) and Dr. Sue Nichols (University of New Brunswick, Canada)). Numerous meals were used to

discuss these topics. Another major assignment in preparing a World Bank project brought me to Bulgaria (7 trips totaling 2 months). Although the scope of the visits was differently, Moldova and Bulgaria could be considered as two background ‘cases’ for this study.

The completion of the study took longer than intended. This was mainly caused by my not making enough time available to work on it. The consultancy work, numerous papers and articles, my regular duties as an assistant professor and my marriage and the consecutive birth of 3 children have all contributed to this, but I don’t regret any of them. If I had completed this PhD study earlier, I am sure the outcome would have been different. I assume it is better now, and I am sure that I have learned more by now. In my opinion it is the process of doing a PhD that matters for the doctor-to-be, but of course the outcome of it is the main interest for the rest of the world. I hope you find it of interest.

1. INTRODUCTION

This study looks at ‘Systems of land registration’, and particularly at aspects (of these systems) and their effects (on the well functioning of these systems). The focus is on the technical, legal, and organizational aspects of systems of land registration and their interrelations, and the effects thereof on the functioning of systems of land registration. This is done through a (comparative) case study in four countries.
The subject matter of systems of land registration is introduced in this chapter. Attention is given to the existing knowledge regarding the subject matter, including the strengths and weaknesses thereof, and to the role a systems approach can play thereby. Special attention is given in § 2 to the relevance of land registration for a society. In § 3 the research questions that form the base for this study are elaborated. The methodologies used for tackling those (literature study and case study) are described, as well as how this was undertaken. At the end of the chapter an outline of the structure of the rest of this study is given, in which all of the above themes are further elaborated.

1.1 Land registration

This study is about 'systems of land registration'. Here it is explained what land registration is, which problems arise with regard to describing and studying land registration, and how this study uses a systems approach to improve that.

1.1.1 Main Characteristics

land registration and cadastres
In its shortest possible description the topic of this study concerns 'land registration'. Although there appears to be no universal definition of what exactly falls under land registration, and what does not (see § 2.1), land registration can be described as "the process of recording legally recognized interests (ownership and/or use) in land" (McLaughlin/Nichols 1989: 81). A closely related topic can be found in cadastres, which in a similar way could be described as "an official record of information about land parcels, including details of their bounds, tenure, use, and value" (McLaughlin/Nichols 1989: 81-82). Land registration and cadastre make up an important part of 'land administration'. Land administration can be described as "the process whereby land and information about land are efficiently managed." (MOLA 1996). Land administration deals with the ownership, use and value of land.

land tenure and surveying
As the given definition indicates, land registration deals with interests in land (which in many societies includes improvements such as buildings and trees). These interests can be described as the way in which (groups of) people 'hold' the land. The particular set of interests existing in a society is called the land tenure system[1], and one has to have a basic understanding of this when studying the way land registration is or will be organized in a society (see § 2.2). Usually the different interests in land are described in a legal way, constituting the land law of that society[2].
Even when it is clear which interest a certain person (or group) holds in land, it is not immediately clear which unit of land is concerned. Land as such constitutes a continuum, which people divide into units to which certain interests apply. In addition to the boundaries that can be seen in the field, many societies use surveying and mapping techniques to describe the boundaries between these units and to identify the units as such; an activity often dubbed 'cadastral surveying'.

organizations and aspects related to the recording process
The given definition made clear that land registration is about 'the process of recording' the previously described interests. As with every other non-natural occurring process, this recording process involves people and instruments, brought together in organizations. Virtually every society which undertakes land registration, has more than one organization

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[1] Embodying "those legal, contractual or customary arrangements whereby individuals or organisations gain access to economic or social opportunities through land. The precise form of tenure is constituted by the rules and procedures which govern the rights and responsibilities of both individuals and groups in the use and control over the basic resource of land." (Dale/McLaughlin 1988: 6).

[2] The system of land tenure can, however, be in the form of unwritten and/or customary law, which can be highly influenced by the cultural, religious or political system of the society and the developments thereof.

involved in the recording process, which is divided into many tasks. The number of organizations involved and the exact division of tasks between them differs from country to country[3], often with no apparent explanation apart from historic events. And in each country the background and educational level of the people involved and the level of sophistication of the instruments used seem to differ considerably. Sometimes academically trained professionals (especially lawyers and surveyors) are responsible for an important part of the actual process as private practitioners, in other cases technician level staff work for governmental organizations under the supervision of more qualified managers. In some countries traditional survey equipment (tapes, compasses or simple theodolites) and paper (books and files) are used, in other cases more advanced survey equipment (EDM, aerial photogrammetry, GPS) and computer based storage and manipulation ((administrative) databases and GIS) are used[4]. Clearly land registration concerns a complex process which has many aspects. Three types of aspects that can be considered of prime interest are the technical, legal, and organizational ones[5]. Obviously these aspects do not stand on their own, but influence each other.

goals of land registration

It is the effect of the above mentioned aspects and the interrelation between them on the well functioning of land registration, which forms the topic of this study. This is looked at with regard to both the 'process of recording' and at the information that is kept on the (legal) tenurial relations between persons and land. Later on these will be considered the dynamic and static form of the system of land registration. The study concentrates on this from the point of view of the private possessor of an interest in land and of the private person interested in acquiring such an interest; in short the legal security for the owner and purchaser. This relates only to a part of the goals that are usually attributed to land administration. Taking the list of goals given by Van der Molen, being a) improving land tenure security, b) regulating the land market, c) urban and rural land-use planning, and d) the taxation of land (van der Molen 2001: 4-5), the legal security for the owner and purchaser only relates to a) and a part of b). The rest of the goals are more focused on government and society at large. The information needed for the legal security of owner and purchaser forms an important subset of all the land information that can be found in land information systems (LIS). Both issues are important and interrelated, but Pryer (1993: 64) stresses that there is a wide gulf between those who see land registration as primarily for the benefit of the landowner and those who see it as an instrument of state control. This study concentrates on the providing of legal security (differently Zevenbergen 1998b)

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[3] In many cases different *jurisdictions* exist within one country (esp. when it is a federal country). Both terms are used alternatively in the rest of this study.

[4] EDM = Electronic Distance Measuring (often combined with a theodolite into a 'Total Station'); GPS = Global Positioning System (best known Global Navigation Satellite System (GNSS) operated by USA; Russia operates GLONASS and European Union is going to operate GALILEO); GIS = Geographical Information System (computer based integration of geometric and administrative information).

[5] Compare Zevenbergen 1995: 175-176, Twaroch/Muggenhuber 1997: 3 and Dale/McLaughlin 1988: 28.

1.1.2 Main Problems

land registration is complex
Land registration is a complex process which involves at least technical, legal, and organizational aspects, which influence each other. All these aspects are involved in making a system of land registration function well. It will not come as a surprise that numerous countries do not have such a well functioning system of land registration. It is not easy to operate an effective system of land registration in a country. Nevertheless projects are being undertaken in many countries (especially in developing countries and countries in transition) to improve land registration, or in some cases even start it from scratch.

(not) functioning well
A system of land registration has to achieve its goals to be functioning well. To determine this it has to be analyzed to see if it is fulfilling the functions needed to achieve its goals in a satisfactory way. For land information systems in general, their usefulness depends upon their "updatedness, accuracy, completeness, and accessibility, and also upon the extent to which the system is designed for the benefit of the user rather than for the producer of the information" (Dale/McLaughlin 1988: 8).
Since this study concentrates on the goal of land registration in providing legal security to the owner and purchaser (see § 2.2), and not so much on other goals, that goal has to be achieved well. This means that especially the conveyance of landed property should be safe, quick and not too expensive. Land registration as such comes into this picture twice. Firstly, whenever a deal in a landed property is to be made, the purchaser (or his or her advisor) will verify whether the seller has the interest he or she claims to have, and whether any other interests (like overriding interests) stand in the way of him or her handing that interest over to the purchaser. All kinds of additional information can be very useful to determine the right price for the property. Based on all this information, the parties conduct their transaction. And secondly, when a system of land registration is active, the transaction will only become fully completed when (information regarding) the transaction is registered in order to make the fact known to the outside world. In most countries this land registration process involves one or more practitioners and government agencies scrutinizing the transaction before the registration can be completed. It is also quite complicated to know what constitutes the object of the transaction. A landed property has to be carved out of the continuum of all land, and has to be uniquely identified for registration purposes.

multi-disciplinary
All in all it is a complex process which involves numerous organizations, legal provisions and technical activities, which influence each other. It is therefore not surprising that it is not easy to design, build and operate a system of land registration. This is further complicated due to the fact that this is a multi-disciplinary endeavor, involving at least lawyers and surveyors, and usually also public administrators, IT-specialists, planners and economists.
Each of them looks at land registration from a different perspective, as was eloquently expressed by Nichols (1993: 96-108) through the use of a four-sided pyramid. Each perspective looks at two of the four sides at the most, whereas an apex-view is needed to fully understand land registration (see § 4.1.5).
In the terminology of this study, it can be said that to fully understand the system of land registration, it should be studied in its wholeness. Unfortunately many people, among them also researchers and consultants, are only familiar with a part of the whole system (a subsystem) or undertake studies from the perspective of one aspect system. Studying

subsystems or aspect systems of the whole is of course possible, but one has to remember that the results of such studies do not automatically support conclusions which apply to the whole. However, many authors on land registration seem to be unaware of this. They formulate their conclusions, based on the sub- or aspect system they know, as if they would apply to the system of land registration as a whole. A good example is the often expressed strong preference for registration of title in the dichotomy 'registration of title versus registration of deeds' (see § 3.1). In that example an array of (legal) possibilities is simplified to one question, regularly without even taking into account if the system is achieving its societal goals.

1.1.3 How to overcome?

systems approach
To overcome the problem of not looking at the full picture –the wholeness– of land registration, land registration is seen in this study as a system and studied as a whole. In taking a global view of such a system lies the key to understanding it (Williamson 1991: 181). With this 'systems approach' the system of land registration is studied with attention to several aspects and their interrelations in order to come to a conceptual model that contains the elements, relations and their attributes which one has to consider in studying, describing, analyzing, designing or operating a system of land registration.

Even though the consultants who are involved in numerous land registration projects in developing countries and countries in transition have gained a lot of working experience, there is still a lack of development of cohesive body of knowledge (Williamson 1991: 181)[6]. Describing the system of land registration in a theoretically sound conceptual model would supply a base for a more systematic approach of such projects, and a framework for evaluating project proposals regarding systems of land registration.

With regard to especially non-natural systems, there is a lot of room for deciding where a system ends and its environment begins. It is the researcher who chooses the system that best serves his or her interest. In this study the choice is made to study the 'system of land registration', focusing on goals related to legal security and the land market. This system can be seen as a subsystem of 'land administration' (or of a 'multi-purpose cadastre' as it used to be called). The goals these are trying to achieve keep on widening (compare the trends described in Ting/Williamson 1999 and the Bathurst Declaration (FIG 1999)). Although there is no doubt regarding the relevance of these wider goals, the opinion is taken that there still is a strong need for a more holistic understanding of the system of land registration for the 'traditional' goals. These have to be seen as the core business of land registration. If those fail, all the (later) added goals can never be reached. This is also in line with the concluding remarks by a World Bank official at the first "Vienna Initiative" conference[7]. He said that Central and Eastern European countries should focus on legal

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[6] This statement was clearly true in the early 1990s, but since then the situation has started to improve. Examples can be found in the work at University of New Brunswick (esp. McLaughlin and Nichols), Technische Universität Wien (esp. Frank and several PhD's he supervised) and Aalborg Universitet (esp. Stubkjær who also heads the EU-sponsored COST-Action G9 'Modelling Real Property Transactions').

[7] Central, Eastern and Baltic Europe: International Conference on the Development and Maintenance of Property Rights; Real Estate Property Rights Administration, Vienna, April 1-4, 1998.

security and land market goals in the short run, before moving towards multi-purpose cadastre. (Bogaerts 1998).

diversity
No two countries or jurisdictions that have effective land registration (most of the developed countries, although some exceptions exist, and several other countries[8]) have the same or even a very similar system. Every one has its own system of land registration, partly adapted to its specific needs, partly determined by the incidences of its (historic) development. This raises the question if it is possible to say anything about land registration in general at all. This is possible, because the number of basic differences between systems of land registration at a functional level is smaller than is normally thought. Too much attention is usually placed on the differences at the task level when describing systems of land registration. A fact that can be explained by the lack of models and the complexity of the systems which leads to even researchers needing years to dig out the similarities. (Stubkjær in a private communication in March 1996). Similarly Twaroch and Muggenhuber (1997: 15) say that even when the historical developments are different in each country there are still the same needs to administrate land.

aspects
Land registration is a complex process involving many aspects. Several disciplines perform partial roles within it, and almost everywhere several governmental and private organizations are involved. Certainly before computerization emerged, the two main disciplines involved in land registration were law and land surveying. Nowadays computerization is being introduced in most countries and ICT-knowledge is needed as well. The above can be summarized with the terms technical and legal aspects. At least as important for successful land registration is the number of, and the relations between, the organizations involved in land registration. That can be described as the organizational aspects.
In a similar fashion Dale and McLaughlin distinguish between the legal, technical and institutional issues of land registration (Dale/McLaughlin 1988: 28) and Twaroch and Muggenhuber between the legal, organizational and technical principles of land administration systems (Twaroch/Muggenhuber 1997: 3). And although other distinctions could be made, this study focuses on the technical, legal, and organizational aspects of systems of land registration. The opinion is taken that the way a system of land registration functions within a certain country depends on all three of these aspects, and on the way these aspects interrelate and supplement each other.

environment
This study focuses on the technical, legal, and organizational aspects of systems of land registration. This choice determines to a large extent the boundaries of the system of land registration from its environment (see § 4.1.2). Important aspects that are part of this environment are the social-cultural aspects –determining the type of legal and administrative system existing and the mentality of society and the staff involved in land registration– and the financial-economical aspects –determining the resources available for land registration, but also the goals the system is supposed to achieve. This environment is of course of great importance and influences the system without doubt, but the emphasis is put here on the technical, legal, and organizational aspects. There is the

[8] There are only about 30 countries whose cadastral systems would pass a critical test (Bogaerts 2002: 4).

constant need to limit the scope of any research project[9], but one should do so knowingly and keep that in mind when drawing conclusions. Furthermore regular references are made regarding aspects that are not taken into account within the system of land registration.

the aspects elaborated
Although the terms technical, legal, and organizational aspects relate to a general understanding, it is useful to elaborate here to some extent what is considered to be a part of each of those terms.

technical aspects
Most of the technical aspects belong either to the field of land surveying or the field of information and communication technology (ICT). More than with the other types of aspects there seems to be an almost constant change within the technical aspects, due to the ongoing and quite rapid development of technology. Therefore the ways that cadastral systems have evolved have often been dependent more on technology and what is technically possible than on the dictates of land, law and people (Dale 1979: 29).

Important technical aspects deal with the way parcels are identified and boundaries are determined. In most cases this involves cadastral surveying (with or without coordinates in a national geodetic network). The result can be in the form of a cadastral index map, but different methods do exist. In many cases some use is made of topography (either from existing topographic maps or aerial photography) where features like hedges, fences, ditches or specially erected monuments are used as boundary markers. The way this work is carried out in a country depends to some extent on the legislation that is in force, but it is also influenced greatly by the technology that is available at a given moment in time. Sometimes the official demands on the work can not be met using the technology available, but in other cases better and more efficient methods –made possible by new technology– are hindered by the (survey) regulations. On the other hand the latest developed technology is not always available locally but at great expense or has not proven itself in the field yet.

Other important technical aspects deal with the technology used in storing and supplying the information (data bases, geographical information systems (GIS), digital networks). Again the question what to do arises. Of course no more should be done than can be done, but sometimes a little less is also acceptable. The setting up of a data base is a complicated activity, and it is not feasible to upgrade a data base all the time. Once a data base has been set up it should be used for some time, before elaborate improvements should be made. Otherwise high costs will be involved, and not enough experience can be drawn from it. This means that a lot of effort has to be put into information analyses and system design before any technology is implemented in the day-to-day routine. Once implemented this new technology can make the present tasks be performed faster and more efficient, and make new functions possible. Some of those new functions will help the goal of legal security of owner and purchaser, others will facilitate authorities and/or private business involved in real estate.

[9] A German Proverb actually says “It is in the limitation that the real Master proves himself” (trans. G1 – see Annex B).

legal aspects
At first hand the legal aspects seem to be a clear set of points of interest. The legal aspects of land registration have even been described by Ruoff as "the most technical of all branches of the law" (Simpson 1976: 69, Dekker 1986b: 126). Nevertheless they consist of an amorphous agglomerate of laws and regulations. The legislation dealing directly with registration of the legal relation between persons and land obviously contains legal aspects of land registration. Different sets of (legal) principles of land registration exist (see § 2.3.1).

Many other laws and regulations are important as well. Firstly the legislation (which can be unwritten customary law) regarding land tenure is of great importance. Land tenure is organized differently in every jurisdiction in the world, and leads to different sets of rights and interests in land. Of course this influences the way the registration of these has to be set up. Furthermore important parts of the general legislation, especially regarding private law, are of importance. Often general principles of ownership, possession, contracting, accountability, bankruptcy etcetera also apply to land. Sometimes the role of registration in the process of conveyance is regulated in such general legislation.
Special legislation treating information as such can be of importance. This could be legislation dealing with liability with regard to information, copyright on information, privacy of the people whose information is registered etcetera. This legislation is however often overruled by the special legislation for the registration.
The distinction –especially Anglo-Saxons make– between registration of title and registration of deeds is defined in such a way that it is clearly a legal aspect of land registration. Here it is indicated that it is by no means the only legal aspect of systems of land registration.

organizational aspects
The organizational aspects could also have been referred to as the institutional aspects, but with that term often all non-technical aspects (including the legal ones) are implied.
The main point of interest here is which (separate) organizations and private practitioners are involved in the process and how they compete with and complement each other. This is wider than strictly the question whether the 'registrar' is independent from the 'cadastre', or whether the surveys and the drafting of official documents are undertaken by government officials or private surveyors and notaries. The outlines of the way this is organized in a specific jurisdiction usually follow from relevant legislation, but in many countries the day-to-day practice differs significantly from this law-in-the-books. It is the actual way things are organized, are being done, that is of prime interest in understanding "what makes a land registration 'go round'".

In addition to the relations between organizations, the way the organizations involved are operating internally (their internal structure and the way they are managed) influences the way they function, but that is only treated as a side issue in this study.
With regard to the organizational principles of land registration Twaroch and Muggenhuber point out that independent from legal and technical solutions a land administration system (like land registration) is successful when all partners involved in land management (owners, banks, and agents dealing with information on land) have trust in this system (Twaroch/Muggenhuber 1997: 5). This notion of trustworthiness is considered to be very important, and it is elaborated further in this study (see § 4.2.2).

interrelations between aspects

As already can be seen from the description of each type of aspects, they are closely related. When looking at one type of aspects, the other two types usually set some limits to what can be achieved by that type. This usually works both ways to some extent.

In some cases, for example, the use of certain (new) techniques is not allowed by the existing legislation, whereas in other cases the legislation makes demands that are not technically possible (yet). Regularly implementation of new (ICT) technology can make organizational changes inevitable, although so-called 'information czars' often try to prevent this to protect their power base. On the other hand improved ICT makes it possible to share one database between separate organizations. Often there is legislation that describes the outlines of a certain organizational structure (e.g. private or public surveyors or notaries), whereas an existing organizational structure might effectively hamper the process that is described in a law. These interrelations play an important role in this study when describing the way systems of land registration function.

1.2 Societal Impact

A system of land registration should never be an end in itself. It should be an instrument to reach a goal. That goal, within the context of this study, is providing legal security to the owner and purchaser. But why is that a useful end? That is looked at here from three perspectives, which are partly related. Firstly land is considered as the base of all wealth, secondly land registration is looked at as a prerequisite for an active land market, and thirdly a quick look is made at how to view land registration in the light of the field of institutional economics. In all perspectives the economic aspects get the most of our attention, although (wider) social aspects should never be underestimated.

1.2.1 Land as base of wealth

land
Land is often described as the base of all wealth (for instance Williamson 1997: 21). Land gives us all we need: food, shelter, fuel, metal, etcetera. Our mere existence is closely related to land (Binns 1953: 1). Therefore it is often assumed that clearness regarding land tenure will strengthen an efficient and environmentally sound exploitation of this wealth. Land registration can provide this important information with regard to the question who 'holds' which unit of land. It is an important asset for any country, especially when the state of development demands an intensive use of relative scarce areas of land. (compare Otto 2000: 13)

meanings of land
Nevertheless land (as said including all real estate) has many different meanings in a society, and even to the same person. Those could include:

- economical asset (for industry, but especially for commercial farming)
- social security (esp. for subsistence farming)
- place to live (compare the Habitat Global Campaign on Secure Tenure)
- 'a family heirloom' (like castles and mansions in England)
- power base for jurisdictions (governments in exile miss this very much)
- place to put down transport links
- places of social-cultural importance (worship, historical monuments etc.)
- etcetera.

The way it is 'defined' differs between those approaches. Land is preliminary defined by use patterns, which if enough individualized and supported at some point by a legal construct, can be 'owned'. Even then a difference can exist between ownership and use (other person, but also use limitations like in zoning regulations which leave ownership per se alone).
Although this is not the topic of this study, it should be realized, for it clearly has implications on systems of land registration. From the different meanings, can stem different expectations of the system of land registration. There is for instance no real use for facilitating transfers in the context of the social-cultural meaning, although there is for assuring legal security (including avoiding loss of territory etc.). And since the usual aim is to have a system of land registration apply to a whole jurisdiction, the common expectations and the most important specific ones have to be found to avoid an unnecessary complicated system (see § 3.3).

clarity of tenure
Land (and improvements upon it) fulfil a crucial role in virtually every society. To fulfil this role, relations between persons and land are made in every society. In most countries nowadays the system of land tenure in which these relations are laid down, involve rights which link individuals (or small groups of people) to relatively small and well defined units of land ('parcels'). It is of utmost importance that these relations are stable and that man or woman can be assured that his or her right will be continued for some time. This allows him or her to recuperate investments he or she makes in or upon the land. An important instrument to assure this within a jurisdiction can be land registration (when it is appropriate and efficient enough).

rural land tenure
The Food and Agriculture Organization of the United Nations (FAO) clearly sees that adequate institutional arrangements to determine rights and access to rural resources, such as land, water, trees, and wildlife, are a prerequisite to agricultural development and food security. More specifically this calls for improvements on the institutional arrangements for property rights, and on functioning land markets and land administration to take account of mortgage-secured credit for investment and good governance of land and natural resources. (http://www.fao.org/sd/IN1_en.htm). Clearly an appropriate system of land registration is part of this larger complex. FAO clearly takes an interest in that as can be seen from *inter alia* a Keynote Address at the 1994 FIG Congress in Melbourne, and the FAO publication 'Cadastral Surveys and Records of Rights in Land' (Binns 1953 and its recent update Binns/Dale 1995).

Habitat Global Campaign on Secure Tenure
As a result of the Istanbul Declaration on Human Settlements from the 1996 Habitat II conference and its follow-ups, secure tenure is getting a lot of attention within Habitat, the UN Human Settlements Programme[10] (http://www.unhabitat.org/tenure). The declaration, in order to support the two main themes of the Habitat Agenda "Adequate shelter for all" and "Sustainable human settlements development in an urbanizing world", among others seeks the active participation of public, private and non-governmental partners at all levels to ensure legal security of tenure, protection from discrimination and equal access to affordable, adequate housing for all persons and their families (Habitat 1996). This has been realized with the launch of the Global Campaign on Secure Tenure, one of the two special themes on which Habitat is currently focusing (the other being Urban Governance). The campaign identifies the provision of secure tenure as essential for a sustainable shelter strategy, and as a vital element in the promotion of housing rights. It recognizes that the urban poor provide the vast majority of their shelter themselves. In a strategic vision on the issue it is said that "There is a mountain of evidence that has demonstrated that the granting of secure tenure is the single most important catalyst in the mobilising of individual investment in the locality. The insecurity of tenure is, likewise, often associated with the marginalisation of individuals and communities, to a concomitant lack of investment, and as a contributory factor to petty criminality and challenges to urban governance generally." (Habitat 1999)

dormant capital
Before the link between stimulating individual investment and secure tenure was introduced. But even without formally registered tenure arrangements, people invest in their

[10] Until recently called the UN Centre for Human Settlements.

shelters and (small scale) enterprises. The total amount of money invested in such informal (immovable) property is still enormous, as clearly explained by de Soto in his book 'The Mystery of Capital' (de Soto 2000). However, due to its informality this capital is too unsure to be used as collateral for generating more capital to be invested in the economy as a whole. To be able to do that the properties will have to be formalized, or as de Soto also calls it 'paperized'. For immovable properties this formalization will go through a system of land registration that is accessible for those (informally) holding these properties. As long as that is not the case, this (potential) capital lies dormant, whereas only the elite will profit from the formalized sector of the economy. This is to the detriment of the individuals involved, as much as to society as a whole, as has been shown *inter alia* in studies by the I.L.D.[11]

societal benefits

Clearness regarding the land tenure situation is very advantageous to society. It is not only the individual who benefits from the enlarged legal security, but society as a whole (de Soto 1989: 159-160). Since he or she will be much more inclined to invest in his or her land and the improvements upon it. Also it will be much easier for the right holder to get loans, since the real property can be used as collateral. (similar Dale/McLaughlin 1988: 175) Because the right holder knows that he or she (or his or her family) will suffer the long term consequences of bad management of the land and improvements, the right holder will take good care of them. Usually this includes using it in a more environmentally sound way, not exhausting the soil for instance.

So both the economy and the environment of a country will improve when the land tenure situation is stable. A good system of land registration is an important tool to help realize that.

land transfer, conveyancing

At the same time such a system will also improve conveyancing. It will make the transfer of rights in land easier by supplying a mechanism for these transfers. That makes it safer to invest in or purchase rights in land. It will reduce the time and cost involved in transferring such rights, and lead to stimulation of the land market and to more cost effective use of land (Dale 1993: 30). It is regularly argued that the development of a country is not feasible without efficiently operating land markets. Such a land market needs a mechanism for the transfer of rights in land that is based on an efficient system of land registration.

The importance of this is even demonstrated in the 1995 James Bond movie 'GoldenEye'. Alec, the allegedly killed Agent 006, threatens to return the UK to the Stone Age by whipping "Everything on every computer in Greater London: The tax records, stock markets, credit ratings, land registries, and criminal records ...".

advantages to the government

Adequate land registration will also assist the government. Although that angle is only treated as a side issue in this study, it is obviously of importance to the government and to society. The two most important benefits for the government are the possibility to raise land

[11] Instituto Libertad y Democracia (Institute for Liberty and Democracy), the Peruvian N.G.O. headed by Hernando de Soto, the author of i.e. the more general books 'The Other Path' (de Soto 1989) and 'The Mystery of Capital' (de Soto 2000). There is also literature on I.L.D.'s work on land registration, incl. de Soto 1994, Palmer 1996, McLaughlin/Palmer 1996.

tax fairly easy and to be able to really carry out land policies through proper land management (Larsson 1991: 57-65). After summing up 23 identifiable benefits from cadastres (land information systems), Dale (1993: 30-33) concludes: “It is as valid to ask whether a country can afford to be without a good land information system as it is to ask whether it can afford to install one.” The set up of land registration and cadastres was even explicitly mentioned by the Dutch Minister for Development Cooperation in an interview on the importance of good governance in early 1995.

land control
There is, however, a risk that the use of land registration to support all kinds of governmental land control functions will backfire on the system as a whole (Zevenbergen 1998b: 10-11). Such control functions are usually administered through bureaucratic procedures, which might tip the balance for people not to use the formal system. In addition to these formal constraints, such controls contain material constraints (like not allowing foreigners to own land, maximizing the area one person can own, demanding agricultural education for the purchaser of agricultural land, etcetera). This might cause certain parties to stay away from the land market, making it less lively. It might also cause parties which can not legally own the land, to acquire it informally or through ‘straw men’. To get an open, lively land market, the constraints from the land market should be removed as much as possible (Williamson 1997: 30).
Furthermore one should be aware that in many countries where this is not expected land markets operate relatively well although illegally and with no service provision. In terms of institutional economics (see § 1.2.3) this means that land transactions are taking place within relatively close communities, over short distances or between people who know one another. However, making transactions possible over large distances between unknown people is a precondition for real economic growth (North 1990: 35). It is doubtful if that will be reached through such a regulated land market. Therefore such land markets are to be freed from constraints, supported and formalized. (compare Williamson 1997: 30)

1.2.2 Land markets and the overall economy

markets and institutions
The economy at large, and within it the land market, will only flourish if supported by certain institutional arrangement. “Markets stand on a base of institutions. Like the air we breathe, some of the public goods that those institutions provide are so fundamental to our daily economic life that they go unnoticed. Only when they are not there, as currently happens in many developing countries, do we grasp their importance. Without the rudiments of an institutionally-upheld social order, markets cannot function ... Markets cannot achieve high development without effective property rights. But these rights will be effective only if three conditions are met:”

- protection against theft, violence and other predatory acts;
- protection against arbitrary government action disturbing commercial activity (like unforeseeable special taxes and regulations to out-and-out corruption);
- reasonably fair, predictable juridical branch. (Spanish Registrars 1998: 6, referring to the World Bank’s 1997 World Development Report).

land registration and land markets
In order to have a flourishing land market, these conditions can be translated in the need for *inter alia* a comprehensive system of land registration. Such a system has “the potential to support effective land markets” (Williamson 1997: 23). Thus a system of land registration

will not automatically lead to an effective land market. To achieve that goal, the system has to be appropriate for the situation at hand, but numerous other conditions have to met as well. An effective land market depends on an array of institutional arrangements of which land registration is one. If any of these arrangements is (too) badly designed or operated, or one of the arrangements is ill tailored towards the others, the land market will suffer severely.
The connectivity of all of this can be summarized by depicting these nested subsystems as contained boxes (see Figure 1.1). Indicating each time that bad functioning of an inner box will lead to bad functioning of the outer box, but good functioning of an inner box only has the potential to lead to good functioning of an outer box, since that depends on other items as well.

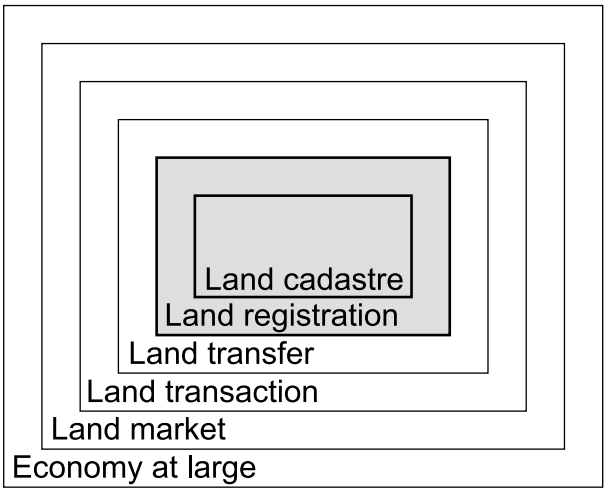

Figure 1.1; Land registration as a nested subset of the economy

land market characteristics
The land market could be defined as an intense or less intense activity of selling and acquiring land. Selling and buying is only possible under certain circumstances and with the help of institutions. Thus the land market is a forum where certain activities take place under certain institutional conditions.
Looking at the market in this way the following elements can be distinguished::

- goods;
- players;
- legal framework (distinction should be made between the regulations resulting from an understanding from society and the execution of these regulations through government, cadastre, etc.);
- administrators (institutions like cadastre, notaries, etc.);
- financing, including financial regulations form the state. It is important that the state creates a good economic environment.

Besides these the following elements should be considered:

- the political atmosphere
- the social conditions
- the environmental considerations (Fendel 1997: 29).

More precisely for a land market to work there must be:
- a clear definition and sound administration of property rights;
- a minimum set of restrictions on property usage consistent with the common good;
- the transfer of property rights must be simple and inexpensive;
- there should be transparency in all matters; and
- there must be an availability of capital and credit. (Dale/Baldwin 2000: 4)

Land market operations need to be supported by three regulatory pillars:
- land registration and cadastre
- valuation
- financial services (Dale/Baldwin 2000: 4-6, also Osskó/Niklasz 1999: 1 claiming the first one to be the most important one).

Obviously in the context of this study the focus is on the first one only, but it just stresses again that is a necessary, but not sufficient, prerequisite of a well functioning land market to have a well functioning system of land registration.

All of this said, it should not be forgotten that there are not only formal, but also informal markets, even though governments usually do not know how the informal market works (Fendel 1997: 4-5). Dale says: “It is known that there exist informal land markets, which operate in an inefficient way. Furthermore these informal land markets put a high burden on the owners.” (Fendel 1997: 13)

economic justification
Although the economic justification of land titling projects and cadastral systems is the subject of several studies and publications, there seems to be no absolute positive answer. In developed countries the systems are accepted as basic infrastructure in support of free market economies, and the discussions deal with the economic justification of computerization (Williamson 1997: 32). For developing countries especially the (World Bank) publications by Feder are well known (Feder 1987, Feder 1998, Feder/Nishio 1999). In general there is evidence that land registration has positive (economic) effects, like better access to credit and higher land values. However, certain conditions have to be met, and certain social aspects need to be considered as well. Williamson (1997: 32-34) also presents some less positive results from studies in especially Africa. Unfortunately it is not really possible to draw general conclusions from this. The actual circumstances, like type of land tenure, scarcity of land, existence of (small scale) financial institutions, sophistication of the system of land registration, presence of a land reform component, etcetera, all highly influence the outcome of a cost-benefit analysis. As said before, merely introducing a system of land registration is seldom enough to really make a difference on its own. Nevertheless it is an important component within a larger package.

1.2.3 Institutions and Transaction Costs

The importance of institutions within a society to reach economical development, has been greatly emphasized in the work of professor Douglass C. North, 1993 Laureate of Nobel prize in Economics. One of the most important institutions North mentions are property rights (although not only on immovables). His work not only supplies a base for looking at the functioning of systems of land registration, but also for better understanding the problems that are encountered when improving them. A short look is given at some of his work and its application to land registration.

institutions

North defines institutions as the rules of the game in a society. More formally they are “the humanly devised constraints that shape human interactions.” (North 1990: 3) Institutions (the rules) should be clearly distinguished from organizations (the players). The main goal of institutions is to reduce uncertainty by establishing a stable (but not necessarily efficient) structure to everyday life. Obviously the structure will only reduce uncertainty if it is well observed. This makes the costliness of ascertaining violations and the severity of punishment an essential part of the functioning of institutions. Enforcement poses no problem when it is in the interests of the other party to live up to agreements. But without institutional constraints, self-interested behavior will prevent complex exchange, because of the uncertainty that the other party will find it in his or her interest to live up to the agreement. The transaction costs will reflect the uncertainty by including a risk premium, the magnitude of which will turn on the likelihood of default defection by the other party and the consequent cost to the first party. Throughout history the size of this premium has largely prevented complex exchanges and therefore limited the possibilities of economic growth. (North 1990: 33) In general institutions affect the performance of the economy through the impact they have on the transaction costs.

North applies the role of institutions and the related transaction costs not only to the economic market, but also to the political market. Thus the development or change of certain institutions (like property rights) is not undertaken when a group benefitting from it is not able or willing to invest enough bargaining power into it in the political market. This can often account for the obvious persistence of inefficient property rights. For further elaboration on North’s concept of the political market and its effects on changing land registration see (Zevenbergen 1999).

In addition to the formal constraints (like laws), informal constraints also play a major role in the institutional framework. Even when political changes lead to drastic changes in the formal constraints, the informal constraints will not change overnight. In fact, the actual differences from before and after such revolutions are much smaller than often expected. At the same time, the complex of informal and formal constraints allows continual incremental changes at particular margins. These small changes in both formal rules and informal constraints will gradually alter the institutional framework over time, so that it evolves into a different set of choices than it began with. (North 1990: 68)

transaction costs

Institutions influence the height of transaction costs. “The costliness of information is the key to the costs of transacting, which consist of the costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights and policing and enforcing agreements.” (North 1990: 27)

In the neoclassical theory within economics it is assumed that there is a frictionless exchange process in which property rights are perfectly and costlessly specified and information is likewise costless to acquire (North 1990: 11). In such cases, because buyer and seller have been able to ascertain costlessly the value of all the attributes, and there is no uncertainty or insecurity of property rights, the standard supply and demand models with zero transaction costs would define the value of the asset. In fact, however, many attributes influence the value to the buyer and seller. The smaller the discount from the idealized neoclassical model, the more perfect the market. Institutions define and determine the size of the discount, and the transaction costs that the buyer and seller incur reflect the institutional framework. (North 1990: 62)

But nowhere a perfect market exists. Certain institutions –such as rules that restrict entry, require useless inspections, raise information costs, or make property rights less secure– in fact raise transaction costs. And because political markets are imperfect, institutions anywhere in the world are a mixed bag composed of those that lower costs and those that raise them. Even when rather efficient property rights are devised, they will typically have features that will be very costly to monitor or enforce, reflecting built-in disincentives or at the very least aspects of the exchange that provide temptations to renege, shirk, steal, or cheat. In many cases informal constraints will evolve to mitigate these disincentive consequences. And the modern Western world provides abundant evidence of markets that work and even approximate the neoclassical ideal. But they are exceptional and difficult to come by, and the institutional requirements are stringent. (North 1990: 110)
Many of the property rights laws of such successful Western countries have been adopted by other countries, but with very different results. Although the rules are the same, the enforcement mechanisms, the way enforcement occurs, the norms of behavior, and the subjective models of the actors are not. Hence, both the real incentive structures and the perceived consequences of policies will differ as well. (North 1990: 101)

Transaction costs are the most observable dimension of the institutional framework that underlies the constraints in exchange. These constraints consist of costs that go through the market and therefore are measurable, as well as of hard-to-measure costs that include time acquiring information, queuing, bribery, and so forth, and also of the losses due to imperfect monitoring and enforcement. These hard-to-measure costs make it difficult to assess precisely the total transaction costs resulting from a particular institution. Nevertheless some progress is made in measuring the effectiveness of institutions, for instance through comparing the level of interest rates in capital markets. (North 1990: 68-69)

land conveyancing
When certain resources reach a certain level of scarcity, property rights over them are introduced. With regard to land in most of Europe this happened a very long time ago. Property rights are meant here as institutions by which individuals appropriate over certain goods they posses. “Appropriation is a function of legal rules, organizational forms, enforcement, and norms of behavior –that is, the institutional framework." (North 1990: 33) These property rights help to reduce uncertainty with regard to exchanges like land transfers. With regard to land transfers a system of land registration is a very important step in securing land rights and facilitating the land market. But the landowners and purchasers of land rights will have to devote time, money and energy in preparing documents and going through procedures to reduce the uncertainty that unregulated land transfers would have. Thus, the working of these institutions induces transactions costs, which used to be ignored in the neoclassical theory within economics.
An extra complication exists with regard to land, since it is one of the most vital assets of any society. Therefore the individual interests of the landowner have to be limited in the general interest. Every country has numerous laws by which the government controls or restricts characteristics which normally go with private ownership when it comes to ownership of land. Different laws and regulations exist for land tenure, land transfer, land control and land management. In order to implement government policies to take care of these responsibilities, the government needs instruments to accomplish changes and to monitor the situation. Together this forms the system of land administration. As said before registration is often made dependent on the land control approvals. When these approvals themselves are hard to obtain (only through lengthy, expensive and bureaucratic

procedures), this will certainly impede the speed of registration. In other cases information from the system of land registration is used to monitor whether the laws and regulations are abided by. In cases where the conditions for one of the needed permits are not actually met by a transaction, this transaction cannot be registered in its true form. In such cases the purchaser might have recourse by using a straw man. Then the registration appears to be complete and up-to-date, but is in fact showing a paper world, which abides by the laws, whereas reality might be quite different.

transaction costs with land
It is generally understood that land registration is needed for the reduction of uncertainty on exchange of land rights. The transaction costs caused by this should be compensated by the reduction in uncertainty that would otherwise occur with such exchanges. To really reduce the uncertainty, land registration should lead to reliable information, which is up-to-date and reflects all transactions that took place with regard to a property once it has been registered.
Experience through time shows that land registration only runs well when virtually every transfer is registered. To achieve such a level of completeness, many countries make registration mandatory. But even then, people are not automatically willing to register every transfer. The money, time and energy needed to get from the agreement between parties to formal registration, has to be in balance with their resources and the advantages they perceive in doing so. Especially for underprivileged people (for instance in informal settlements), the transaction costs for having their land tenure rights formally recognized and registered, tend to be too high. Using the land registration process as an instrument for implementing land control restrictions might tip the balance in such a way that people will continue to operate in the informal sector. And that in itself is a great disadvantage for society as a whole, and especially for the economy of any country. Many useful and desired economic exchanges will not take place because the institutions in the informal sector –as North's theory tells– do not allow for complex exchanges between people who have no prior relationship or kinship. Strictly demanding registration by law under such circumstances is likely to worsen the situation. It can even force more people into the informal sector, although in certain countries –*see Indonesia*– the courts realize the situation and accept these unregistered transfers. But even developed countries sometimes had rules that can turn out to be counterproductive.

It appears that two steps have to be taken to accomplish a formal system of land conveyancing which is useful to almost everybody in society and benefits the economy at large. The first step is to make sure that the system of land registration does not contribute to an unattainable level of transaction costs by limiting the procedures to what is really necessary. The second step is to convince the landowners and purchasers that it is in their interest to use the registration procedure. Doing this by introducing clear incentives to register (both by having a smooth procedure and by having clear benefits when registered (esp. access to credit)) is more likely to succeed than merely demanding registration by law (Palmer 1996).

It is not always easy to prevent the transaction costs becoming too high. Sometimes certain professionals make (a large part of) their living because of existing inefficient procedures. Lawyers usually benefit from confusion regarding land rights and surveyors prosper over high levels of surveying accuracy. In both cases their benefits will increase when they are organized as protected monopolies of private practitioners (like public notaries or licensed surveyors). In this way lawyers tried to prevent the introduction of title registration in South

Australia by Sir Robert Torrens in the 1850's. In addition, many countries have an elaborate governmental bureaucracy, with many uncooperative agencies, which are likely to protect their vested interests. These interests are partly in the sphere of departmental power struggles and partly in the sphere of income generation; both for the department through formal fees and for the individuals working there through informal fees.
Often the vested interests use technocratic arguments (which include legalistic intricacies) to favor the level of their involvement (compare Wallace 1999: 314). These kinds of arguments are not easily understood by outsiders, and sometimes even presented in good faith by the specific profession. By not looking at the wider picture of the whole system of land registration (as is done in this study), or the whole land market or economy, it is quite easy to push for the technocratic best solution for one relative detail, without considering the costs and benefits for the landowner and purchaser. (Zevenbergen 2000: 74-75)

But even if all involved would really try to come up with the best solution, success is not guaranteed. The formal constraints as laid down in rules can be changed when enough groups on the political market are convinced that this is useful, but the informal constraints are much more durable. It is very important that the landowners and purchasers trust the system in such a way that participating in it has more benefits for them than it has disadvantages. Inducing them to use the registration process can –as said– best be done by introducing clear incentives to register (both by having a smooth procedure and by having clear benefits when registered (esp. access to credit)). If this fails the price –for both the individual and society at large– is high. He or she will miss out on many advantages of the formal sector and stay ‘hiding’ in the informal sector and forgo economically sound exchanges.

1.3 Research Outline

1.3.1 Main Premises

In this study land registration is viewed as the whole complex of the process of recording (dynamic) and the collection (static) of information on the (legal) tenurial relations between persons and land.
In describing this complex numerous sets of aspects can be defined. In this study the technical, legal, and organizational aspects are given the main emphasis, whereby social-cultural and financial-economical aspects are seen as (important) parts of the context.
It is assumed that the technical, legal, and organizational aspects, and especially the way they do interrelate (or not), have a great impact on the way land registration is functioning in any given country.
All of this is studied with the main focus more on the point of view of the legal security for the owner and purchaser of land, than on the importance of land registration for the government (like for land management and land taxes).
A system of land registration is functioning well, when this legal security is offered in an adequate way, which not only includes the assurances given, but also the speed offered and the fees charged. To determine if a system of land registration is functioning well, this study uses the (qualitative) level of 'trustworthiness' of the system, and not any quantitative criteria.

1.3.2 Research Questions

The above leads to the following study's question:

> How do the technical, legal, and organizational aspects and their interrelations affect the way a system of land registration is able to provide adequate legal security to owners and purchasers of real property within a given jurisdiction?

With regard to this question four hypotheses are formulated in § 5.2.1. In addition to answering the question as such, the question also forms the base for (conceptually) modeling systems of land registration.

In order to be able to answer the study's question within the context described in § 1.1, a number of research questions are asked:

A. What is land registration and how has it developed?

B. What classifications of (parts of) systems of land registrations are used, and how usable are these?

C. What is the systems approach, and how can it be used to (conceptually) model systems of land registration?

D. Why is case study research the most appropriate methodology for this study, and how is it undertaken in a 'rigorous' way?

E. What are the (main) results of the cases studied (for each case and combined)?

The remaining chapters each relate to one of these research questions (question A is answered in chapter 2, etc.).

1.3.3 Research Methods

methods used
For answering the above mentioned research questions, the following methods were used:

- In order to answer questions A and B mainly the existing literature on land registration (and cadastre) is studied. Some items are derived from the cases studied.
- In order to answer question C primarily existing literature on the systems approach is studied. Furthermore that knowledge is combined with the knowledge on land registration (and cadastre) to (conceptually) model systems of land registration.
- In order to answer question D primarily existing literature on the case study methodology in general and on its use with regard to cadastre and land registration is studied. With this knowledge a rigorous case study design is drawn up as the base for the next step.
- Answering question E constitutes this next step. Based on the previously mentioned case study design, a multiple case study with four cases is undertaken. The (main) results are presented here in accordance with the case study design and the models of systems of land registration.

literature study
Systems of land registration differ from country to country, and therefore most of the descriptive literature aims at the domestic reader. The emphasis of most literature is on the national system, and the literature is written in the national language. Some attention is usually given to some general ideas on land registration, including short descriptions of some main classifications. In quite a lot of countries the geographic-political situation of the 19th century still influences the roots of the system of land registration, even though this situation has usually changed quite radically since that time[12]. In addition to the roots of their system of land registration, many of this group of countries also share (at least their official) languages. Important groups in this regard are the Spanish (and Portuguese) speaking countries, the French speaking countries and the British Commonwealth. More recently the countries with territories that belonged to Habsburg's Austro-Hungarian Empire have found their common roots regarding land registration (even though they miss a common language).
Since almost half of the world has been under British rule at some point in history (with the peak around 1900, with the exception of the USA), English speaking experts are strongly represented in the field. There are relatively many of them, and they can study a lot of countries' systems quite easily. In addition English is the most used academic language in the field as well. Unfortunately some of these Anglo-Saxon authors (and opinions)[13] seem to be not always well informed about the other types of systems, although the situation has

[12] Napoleon's Empire and influence sphere collapsed in 1814; many South-American countries gained their independence from Spain in the early 19th century; many new countries gained independence in Middle-Europe in 1918; most African countries were decolonized in the 1960s; etcetera.

[13] As can be seen for instance in Dale/McLaughlin (1988: 24) where they do not even consider the Central European *Grundbuch* as a well known registration of title; only the English and Torrens systems are mentioned.

improved in the 1990s. Even if they are well informed about other types of systems, they often only understand them in terms of the English common law terminology, which is limited in expressing for instance civil law principles[14]. Obviously even within the Anglo-Saxon world there is a great variety in legal traditions and terminologies, especially between Great Britain and the United States.

In order to be able to study literature, one has to have access to this literature. Three levels can be seen regarding the accessibility of written documents:

- Firstly one has to know that a certain document exists.
- Secondly one has to get hold of the document.
- Thirdly one has to be able to read the document (mainly knowledge of the language, but often also knowledge of the subject matter as such is needed).

In general it is not easy to get hold of documents. It includes much so-called grey literature (not being officially published books, widely distributed congress papers or articles in well known journals). Many papers presented at regional, or even national, seminars and all kinds of reports written for bilateral and multilateral projects[15] are only to be found 'by accident'. Furthermore there is not really a clear list of journals in which articles relating to cadastre and land registration can be found. Traditionally they can be found in the (Anglo-Saxon) professional journals of the land surveying community[16]. More recently some articles can be found in journals relating to the general Geographical Information Systems (e.g. IJGIS (International Journal for Geographical Information Science), CEUS (Computers, Environment and Urban Systems)). Furthermore articles can be found in journals dealing with wider land related topics (e.g. Land Use Policy, Habitat International) or occasionally a journal dealing with e.g. economic, legal or anthropological issues. Many libraries do not subscribe to all these journals, and it can be quite hard to track such articles and even some journals.
Luckily this type of problems is rapidly decreasing in importance since more and more papers, journals and library indexes, become available over the Internet[17].

case study
Next to literature study, the knowledge used in this study is collected through a multiple case study. This case study is prepared by studying case study methodology, especially through Yin's book 'Case Study Research' (Yin 1994; see chapter 5). In this case study four cases are studied. As cases the systems of land registration in the Netherlands, Indonesia, Austria and Ghana are used (see § 5.2.2). In each case the following questions are asked:

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[14] Clearly aware of this is Nichols, who calls for studies in other jurisdictions (Nichols, 1993: 190 and 199).

[15] A number of countries are quite active in bilateral assistance related to cadastre and land registration (e.g. Canada, Sweden, Switzerland). The World Bank (IBRD) and several regional Development Banks are very active in lending money for such projects as well. Since the 1990s the European Union has taken an interest in such projects in Central and Eastern Europe and the Baltics, especially in accession countries.

[16] The Canadian 'Geomatica' (previously 'The Canadian Surveyor'), the US 'Surveying and Land Information Systems' (previously 'Surveying and Mapping', 'The Australian Surveyor', (the UK) 'Survey Review'.

[17] Like the database of O.I.C.R.F. (the International Office of Cadastres and Land Records) in Apeldoorn (the Netherlands); www.oicrf.org.

- How are the legal, technical, and organizational aspects of land registration taken care of in each of the selected countries?
- What is the interrelation of these aspects in these countries?
- Does this give an effective functioning land registration to these countries?
- Which more general conclusions can be derived from this?

The study of each of the countries contains a combination of data collection techniques. Literature is studied, staff from relevant authorities, private practitioners, and university staff are interviewed and time is spent looking at the actual processes in both the offices and the field. On the basis of this a draft case report is written, along the lines of the provisional model, and these draft case reports are sent to the key contacts in the countries for comments.

scientific relevance
Much work is being undertaken regarding land registration. In every jurisdiction experts regarding the existing land registration in that jurisdiction exist (usually in the agencies involved) and at universities (both land law and surveying departments). Apart from national publications, short papers on the local situation are presented at international forums (e.g. *Union Internationale du Notariat Latin* (UINL), *Fédération Internationale des Géomètres* (FIG; International Federation of Surveyors). Mainly tuned towards the Spanish speaking world is the *Centro Internacional de Derecho Registral* (CINDER; International Centre of Registration Law) and towards the Middle European countries is the *Arbeitsgemeinschaft zur Durchführung des Forschungsprojekts Grundbuch in Mittel- und Osteuropa* (ARGE Land Register).
Wider expertise with regard to most of the English speaking world for instance through the Cambridge Conference of Commonwealth Survey Officers and Commonwealth Association for Surveying and Land Economy (CASLE)). Several important works related to mainly Commonwealth countries have been published (Dowson/Sheppard 1956, Simpson 1976, Dale 1976). More recent publications have enlarged the scope towards land information systems and land administration, where many other attributes beside the land tenure situation are relevant, and outside (Dale/McLaughlin 1988, Larsson 1991, UN-ECE 1996 ('Land Administration Guidelines'), Dale/McLaughlin 1999).

Internationally there is a small group of experts with a wide view, who often operate as consultants all over the world. The consultants who have been involved in many of these projects have gained a lot of work experience, but not much work has been done on (theoretically) describing land registration in conceptual models. Widening the base for (conceptually) modeling land registration is an important part of this study. With the author's multi-disciplinary background (surveying, land information, civil law, cadastral law) the modeling will be undertaken in an interdisciplinary way, facilitating experts from neighboring academic fields (like information theory, comparative law and technology assessment) to study systems of land registration.

1.3.4 Structure of this report

The results of the study as described above are contained in this report. In addition to this first chapter, in which the topic is presented, the economic and societal use of land registration is demonstrated and the research project is described, this report contains six more chapters.

Chapter 2, Land Registration, sets the ground for the whole report by describing land registration in different ways. Firstly some key definitions are given. Then the different appearances of land registration are described for different stages of development of a society; more or less resembling parts of the history of many countries.
Chapter 3, Classifications of Systems of Land Registration, contains the classification of title registration versus deeds registration and the most important other classifications of land registration that can be found in literature. The classifications are not only introduced and debated, but also an attempt is made to explain them.
Chapter 4, Land Registration as a System, starts with introducing the systems approach as a derivative of the general systems theory and giving several of its concepts that are used in this study. Then the systems approach is applied to land registration, which leads to (conceptually) modeling systems of land registration at several levels of detail.
Chapter 5, Case Study Design, sets the stage for the empirical part of this study. It describes what case study research really is, and how a methodological sound case design is set up. Then the ground work for the actual case study is presented.
Chapter 6, Case Study Results, contains the description of the (main) results of the four cases, with emphasis on those elements which influenced the study the most, and therefore the results of the study. The results of the cases are presented in several ways. More detailed descriptions of the systems of land registration operating in the Netherlands, Indonesia, Austria and Ghana can be found in the separate case reports.
In Chapter 7, Conclusions and Summary, the answers to the study's question and the research questions are presented in a concluding summary. Several other findings which were drawn based on this study are given as well. Those are partly based on the cases studied, and partly on the study overall.

2 LAND REGISTRATION

The field of this study has the unfortunate characteristic of lack of clear and uniform definitions and general accepted classifications. There might be several reasons for this, but that is not of immediate concern here. In this chapter the most important terms used throughout this study are introduced (§ 1). Furthermore the appearances of land registration through (historical) development of the use and marketability of land in societies is described. The use of land registration to owners and potential purchasers on a more or less active land market is what this study focuses on. (§ 2) The chapter gives a short overview of the main principles and features that can be found in systems of land registration (§ 3).
The chapter ends with some concluding remarks (§ 4).

2.1 Terminology and Definitions

2.1.1 Terminology and English

unclear terminology
Within the field of systems of land registration, the use of terminology is very unclear throughout the world. Almost every country has its own system of land registration, which is adapted to its own needs and has developed throughout its own history. Many of these systems developed independently, or only with limited direct influence from the systems in other countries. Thus in many cases a country introduced its own terms for a certain part of the system, and in other cases a similar term was used for clearly distinguishable parts or solutions.

problems with English
In addition to the relative independent development of the system and terminology in each country, a lot of problems are created by translating terms into other languages. Especially problematic in this sense is the use of English as the *lingua franca* in the field when describing a non-common law country[18]. More limited land registration communities using the Spanish, French or German languages do exist[19]. Even the Nordic countries (Scandinavia and Finland) convene in 'Scandinavian' about this topic.
The problem of English as the *lingua franca* takes two forms. In the first place certain civil law principles have to be described by using English common law terms which do not really describe this principle correctly, making it difficult for anybody to correctly compare such principles (like mortgage for a hypothec). In the second place those trained in a common law environment usually only study non-common law systems from English-written sources, which will often give them a partly misleading picture, because they assume that a familiar common law term which has been used to approximate some principle, means the same under common law. To further complicate things there are also differences between the legal traditions and terminologies used within different English speaking countries (esp. between the US and the UK). Persons from a civil law environment do not immediately understand all English common law terms, and thus might be easier prompted to study at least some of the main features of common law to be able to use the English terminology. Nevertheless they often misinterpret or abuse English terms. Surely this happens somewhere in this study as well.

2.1.2 Land Registration and Cadastre

An important, and very confusing, distinction deals with the terms land registration (or registry) and cadastre (or cadaster) for which no universal definitions exist.

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[18] In general countries which have been under British rule at some point (almost half the world) have been influenced strongly by common law; the other countries are either influenced by continental European civil law, by Islamic law or by group-oriented customary law traditions.

[19] Spanish and French are used in many former colonies of Spain and France, which quite often operate related systems as well (although France introduced Torrens systems in some of its colonies); German is used in several Middle European countries, and used as the *lingua franca* in discussing the revitalization of the Germanic system in the former communist Central European countries.

land registration
Land registration can be described by the definition already used in § 1.1.1 as "the process of recording legally recognized interests (ownership and/or use) in land" (McLaughlin/Nichols 1989: 81). The term 'registration' refers to an active process, whereby the result should be called a 'register' and an organization doing this a 'registry'. Land registration usually refers to a predominantly legal registration, where one can see who (supposedly) owns some real property. It usually contains all relevant legal documents regarding real property. The term is more or less used exclusively in the Anglo-Saxon world, although the Middle European *Grundbuch* refers to virtually the same concept. In some cases land registration is exclusively used for 'registration of title' (see § 3.1.2).

cadastre
A cadastre can be defined "as an official record of information about land parcels, including details of their bounds, tenure, use, and value" (McLaughlin/Nichols 1989: 82). It usually refers to a predominantly technical registration, which contains information on where a property lies, what its boundaries are and how large it is. The use of the term cadastre has been mainly found in continental Europe, where it has shifting meanings[20]. In much of the Anglo-Saxon world the term was virtually unused, although the term cadastral surveys has been in use for the surveying of property boundaries. The term is being promoted at the international level by the FIG[21] in 'The FIG Statement on the Cadastre', which contains the following description:
"A Cadastre is normally a parcel based, and up-to-date land information system containing a record of interests in land (e.g. rights, restrictions and responsibilities). It usually includes a geometric description of land parcels linked to other records describing the nature of the interests, the ownership or control of those interests, and often the value of the parcel and its improvements. It may be established for fiscal purposes (e.g. valuation and equitable taxation), legal purposes (conveyancing), to assist in the management of land and land use (e.g. for planning and other administrative purposes), and enables sustainable development and environmental protection." (FIG 1995: 1).

Land registration
the process of recording legally recognized interests (ownership and/or use) in land

Cadastre
an official record of information about land parcels, including details of their bounds, tenure, use, and value

Definitions given by McLaughlin/Nichols 1989: 81-82

[20] In the Netherlands it is often used for the whole system of land registration, including the deeds registers; in Austria it is meant to indicate the (basic) tax register and map, containing parcels with names of owners and valuation attributes; in Central and Eastern Europe it was used to indicate the registers with very detailed (agro-)technical assessment information; in the Nordic countries the term as such is unknown in the local languages.

[21] *Fédération Internationale des Géomètres* = International Federation of Surveyors.

The different applications of the cadastre given in the last sentence, are also referred to as the fiscal, juridical (or legal) and multi-purpose cadastre (e.g. Dale/McLaughlin 1988: 13, McLaughlin/Nichols 1989: 82). The term 'multi-purpose cadastre' means about the same as the term 'land information system' (LIS). A juridical cadastre, which serves as a legally recognized record of land tenure, is closely related to land registration.
A cadastre usually consists of two parts; a geographic part ('map' or 'plan') and a descriptive part ('register' or 'indexes'). The relation between the two is of the utmost importance, and usually arranged through a so-called 'parcel identifier'. All of this will be discussed later in this report (especially in § 2.2.5 and 3.2.3).

It is often mentioned that the roots of cadastres have to be found with the taxation of real properties (e.g. Larsson 1991: 21, Simpson 1976: 111). Without wanting to dismiss the numerous (small scale) activities that had already taken place before, the major development in introducing cadastres (with maps) took place in the early 19th century. In 1807 Napoleon I, Emperor of France, instituted the cadastre in France and all the areas which at that time were under his rule (most of the South and West of continental Europe). In 1817 Francis I, Emperor of Austria, introduced a much improved cadastre for the whole Austrian-Hungarian Empire, which at that time covered most of Central Europe.

Napoleon I on 'his' Cadastre

A good cadastre will be the best complement of my civil law code to achieve systematic order in the area of real estate property. The plans must be so developed and be made so exact that they will permit at any time to define and record the boundaries of land property limits and to prevent the confusion or law suits otherwise arising.

The cadastre just by itself could have been regarded as the real beginning of the Empire, for it meant a secure guarantee of land ownership, providing for every citizen certainty of independence. Once the cadastre has been compiled ... every citizen can for himself control his own affairs, and need not fear arbitrariness of the authorities.

Napoleon I as quoted by Hampel 1978: 42-43

cadastre and land registration
It is again often mentioned that initially the introduction of the (fiscal) cadastre did not influence the existing (juridical) land registration systems much, but that it became increasingly desirable to use the cadastral maps, which were compiled through systematic land survey, for identification of real properties in the land registration process (e.g. Simpson 1976: 122, Larsson 1991: 24). This later development in which the cadastre fulfills both a fiscal and juridical role had always been the intention of Napoleon I, judging by the quotes given in the box (similar Kurandt 1957: 12). But in most countries the taxation side got all the attention during implementation, and the supporting role to the civil code was lost or remained underdeveloped.
Nowadays practically all countries which have both a cadastre and a land registry identify the property in the latter by its description in the cadastre, unless of course the cadastre was not complete (as was the case in Spain, Portugal and Latin America, where the land registry often missed a unique identification and is practically independent from the

cadastre)[22]. This use of cadastral identification in land registration has been both used to enhance deeds registration and to facilitate the change from a deeds to a title registration system (see § 3.1.3) (Larsson 1991: 25-26). On the other hand the cadastre can be kept much more up-to-date when the information on land transactions through land registration is made readily available.
Therefore it is essential to consider land registration and cadastre together. They should at least cooperate and work closely together, something which is unfortunately not the case in many countries. Experts expressed that “there is a strong need to integrate and rationalize land title registry and cadastral systems” (UN 1996a: 28), but very often historically grown situations and the vested power structures based on those prevent the merger of the two organizations involved. In the former East-Germany (G.D.R.) the combined offices where split almost immediately after the re-unification, copying the West-German (F.R.G.) situation.

attempted definitions
With regard to land registration cadastral and non-cadastral countries can be distinguished, which have had clear differences in the history and development of land registration and therefore terminology (see also chapter 3). Nevertheless it was attempted to come to clear definitions in the Commission 7 Opening Address at the 1990 FIG Congress by Henssen and Williamson. They gave the following definitions, which can be better understood in relation to Figure 2.1 (a simplified version of the figure in e.g. Henssen 1995: 6, which depicts what is considered the static system of land registration in chapter 4)

“land registration is a process of official recording of rights in land through deeds or title (on properties). It means that there is an official record (the land register) of rights on land or of deeds concerning changes in the legal situation of defined units of land. It gives an answer to the question "who" and "how".
“cadastre is a methodically arranged public inventory of data concerning properties within a certain country or district, based on a survey of their boundaries. Such properties are systematically identified by means of some separate designation. The outlines or boundaries of the property and the parcel identifier are normally shown on large scale maps which, together with registers, may show for each separate property the nature, size, value and legal rights associated with the parcel. It gives an answer to the questions "where" and "how much".

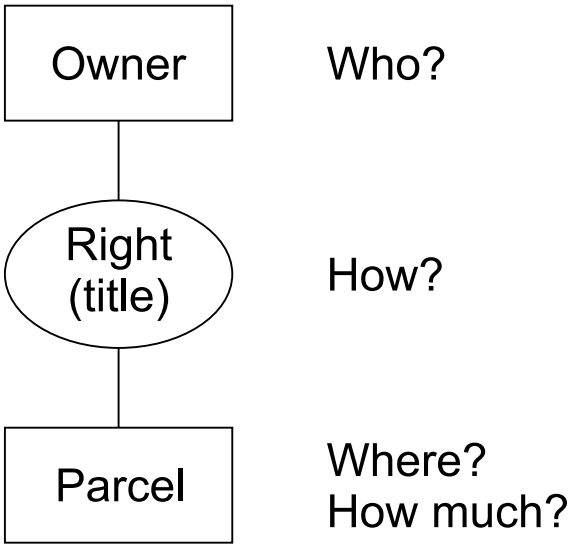

Figure 2.1; Core entities connected

“land recording is usually used to indicate land registration and cadastre together as a whole. Land registration and cadastre usually complement each other; they operate as interactive systems.” (Henssen/Williamson 1990: 20).

[22] Results from a questionnaire of the International Office of Cadastres and Land Records (O.I.C.R.F.) as quoted by Larsson 1991: 25.

These descriptions have, however, not been quoted extensively since, and the paper is not included in the list of literature of the FIG Statement on the Cadastre (FIG 1995). Nevertheless applying this set of descriptions in this study was considered. Since the aim is to look at the whole complex that is involved in collecting, storing, keeping and supplying information on the legal relations between persons and land, the term land recording should have been picked for the title of this report. Nevertheless it was decided to use the term land registration. It is generally known much better than the term land recording. Furthermore the term land registration implicitly puts the emphasis on the role of legal protection of owners and purchasers, on which this study concentrates. The term cadastre, however, would imply much more emphasis on the governmental role regarding land administration and land management. Nevertheless the 'juridical' cadastre, including cadastral surveying and mapping, is seen as a part of the term land registration as used in this study (compare Figure 1.1).

Land administration is a term used regularly in close relation to land registration and cadastre (e.g. Twaroch/Muggenhuber 1997, Zevenbergen 1998a). It is quite a wide term which encompasses land registration, cadastre and more. It could be defined as follows: "Land administration is the operational component of land tenure; land administration provides the mechanisms for allocating and enforcing rights and restrictions concerning land. Land administrative functions include regulating land development and use, gathering revenue from the land (through sale, leasing, and taxation), controlling land transactions, and providing information about the land. These functions are accomplished, in part, through the development of specific systems responsible for boundary delimitation and spatial organization of settlements, land registration, land valuation, and information management activities." (McLaughlin/Nichols 1989: 79).
Land administration can also be described as "the process whereby land and information about land may be efficiently managed". It includes the provision of "information identifying those people who have interests in real estate; information about those interests e.g. nature and duration of rights, restrictions and responsibilities; information about the parcel, e.g. location, size, improvements, value." (MOLA 1996).

When describing land administration in a way comparable to Figure 1.1, the smallest subset would be 'land register' with 'cadastre' being the next, and 'land administration' being on the outside.
The use of the term 'land administration' will in general put the emphasis more on the governmental side of things, which is not the focus of this study. Therefore this term will not be used much in the rest of this report.

2.2 Appearances of Land Registration

2.2.1 Historical Development

The existence of systems of land registration is often explained through an elaborate historic overview of its development. This historical development can by and large be seen parallel to the development of a more and more open land market within a country. It is not so much the historical order of events that is important, but the functions society needed from the system of land registration in a more and more mature land market that set the pace. This study focuses on the functions the system renders to a present right holder and a (potential) purchaser of such a right in different societies. Since many societies have evolved through comparable paths, their economies and land markets went through similar phases. Therefore the historical development in many countries will have evolved along (parts of) the line that is described here. Within systems of land registration technology has always played a role (even paper and writing are steps of technological development). And since the technology available has developed more or less world wide at its own pace, countries making a similar step in their development regarding land registration, might end up with different solutions due to the technological possibilities available at the time they made the step. On the other hand technology might lead to similar solutions being introduced in countries which previously differed a lot in their system of land registration. The following description of securing (individual) rights to land in different societies (or at different times in changing societies) focuses on the most essential features, and does not give all the details, and differences in details, that one can find when studying different societies. To a certain extent the latter will be done for the Netherlands, Indonesia, Austria and Ghana in chapter 6.

2.2.2 Transfer of Immovable Goods

movable goods
In virtually any society individual people (or nuclear families) have control over certain goods which they use to undertake the most essential human activities (like clothing, washing, cooking) and in many societies people have control over certain tools and materials to produce such goods as well. Usually this control over these goods is complete, and the ‘right’ one has over them is then called ‘ownership’. To determine who owns a certain good, one can look at the person who has the good in possession (wears it, carries it with him or her or stores it in or close to the place he or she sleeps in or works at). Problems may arise when somebody else has taken the good away from him or her (stolen it), but for the rest of the time the situation is clear. If goods change hands (through barter or sale), the ownership of the goods is transferred when the ‘old’ owner hands over the good as such to the ‘new’ owner (in exchange for another good or some money). This transfer through handing over is of course only possible with goods which can be moved easily; movable goods.

immovable goods
But not all goods are movable. Land, trees, many other plants and most buildings cannot be moved easily[23]; they are immovable goods. Many societies, certainly when they have

[23] A part of the soil, a tree or plant as such and (parts of) a building could be moved with a lot of effort, but usually this will change or terminate the intended use of them, thus making them functionally immovable.

a market economy, have introduced individual control over land, trees, plants and buildings as well (similar Dale/McLaughlin 1988: 19). Especially with regard to land this might not be a complete control as can be found with movable goods, but still one can possess a strong right in a piece of land. With regard to trees, plants and buildings this right is usually so strong that it can be called ownership, which is also the case with regard to pieces of land in numerous societies. The way these rights are constructed makes up the system of land tenure. One can not always transfer these rights at free will, but even when one can still problems remain.
The main problems lie in the questions how to transfer the right unto the 'new' owner, now that it is impossible to hand over the good as such, and how to arrange for other people to see who owns such a good. And since the good as such can not be moved, and thus not be transferred in the way movable goods can, the transfer of the right in an immovable good has to be solved in a different way.

2.2.3 Sophistication of Transaction Evidence

transaction evidence
An important question in this regard is the manner in which a transaction is confirmed and documented. With the development of societies, different types of transaction evidence have developed as well. They can be classified as shown in Figure 2.2.

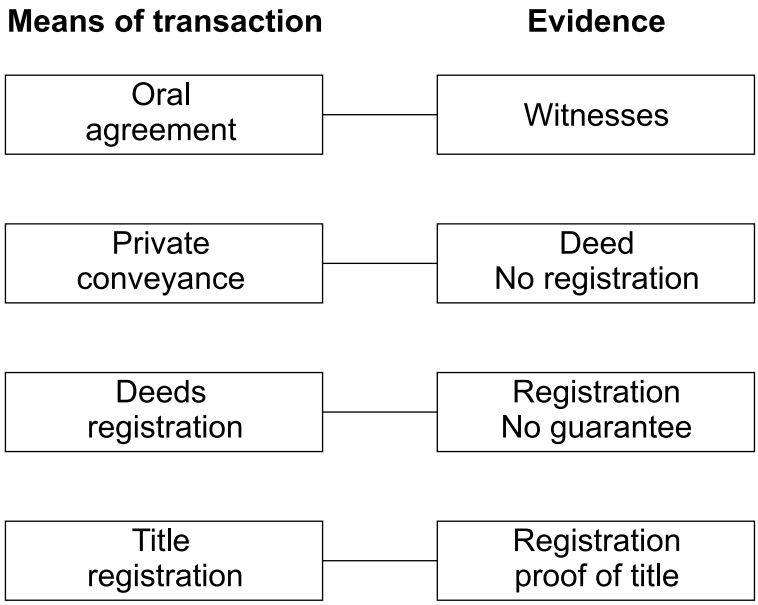

Figure 2.2; Types of transaction evidence (taken from Larsson 1991: 17)

With regard to the transfer of land (in its limited meaning) a second question exists. Land by itself is not an identifiable good. All the land of the world forms a continuum, of which pieces have to be identified which can be treated as immovable goods in which rights can be vested.
This second problem will be discussed later, but first the development of different answers to the question how to transfer immovable goods will be treated here. The four types just given can be recognized from that quite easily.

symbolic transfers
If the need to transfer rights has developed in a paperless and close knit society, transactions will be based on oral agreements, which will be completed by symbolic acts replacing the handing over that usually completes the transfer of a movable good. This is often done by handing over a small symbol, which has been taken from the immovable good. In *Ghana* this is called the 'cutting of *guaha*', whereby the seller gives or breaks a leaf, twig, blade or grass (Ollennu/Woodman 1985: 125). In *the Netherlands* the seller used to 'throw' a twig or blade from the land to the purchaser (Dekker 1986a: 4, Figure 2.3).Since it is not only important for both parties to be aware of the transfer, but also for the other people ('the rest of the community'), this symbolic act has to be performed in the presence of witnesses. This works well as long as a community remains close knit, and transfers are infrequent, but gives problems when a community gets larger or less coherent, and when memories grow dim.

Figure 2.3; Handing over a twig as a symbolic act for transfer of land (Dekker 1986a: 4)

introduction of writing
Societies in which writing becomes more and more normal, usually start to use paper to 'witness' the transfer. When writing is still only done by a small group within society the (illiterate) parties might go in front of a judge, and declare there that one transfers the right to another (or even have the judge declare that the 'new' owner is the owner). The courts will keep record of their activities, and so the transfer is witnessed in writing. At a later date one can retrace that this transfer took place[24]. In other societies specialized 'writers' (called notaries in much of continental Europe and Latin America) would make a document witnessing the transfer.

[24] This system operated in *the Netherlands* for a long time, and was made compulsory in 1529 by Emperor Charles V (and again in 1560 and 1580 by later governments; Dekker 1986a: 5); the system was not free of problems, because it was not clear which court had been used, and the immovable goods as such were badly described and difficult to identify.

private conveyancing

These documents witnessing a transfer are often called deeds. Traditionally these deeds were left in the hands of the 'new' owner, and were handed over to the next 'new' owner over and over again. After several transfers a whole stack of documents was handed over to the next 'new' owner, and usually all these documents were checked by a legal professional before the next transfer was made. This system is called 'private conveyancing' and of course has several risks.

The idea of the system is that the seller proves his or her right by being in possession of the previous documents that were drawn up on previous transfers. Of course the system has to start somewhere, but under the assumption that 'owner A' was generally accepted as the owner at some point in time (for example through a grant from the government or nobility), 'owner F' will be satisfied when buying some land from 'owner E', when E can show him or her the correct document transferring the right from A to B, and the correct document transferring the right from C to D and finally the correct document transferring the right from D to E[25]. But even if E is able to show the whole chain of documents, it is difficult for F to make sure that these are the correct documents. But if F becomes convinced, then E and F will draw up a new document which indicates their contract to transfer the right from E to F, and F will receive this and all previous documents from E. Anyone interested in acquiring this land from then on, will not be able to get the previous documents from E, but only from F, and thus will accept F as the new owner (see Figure 2.4, sub a).

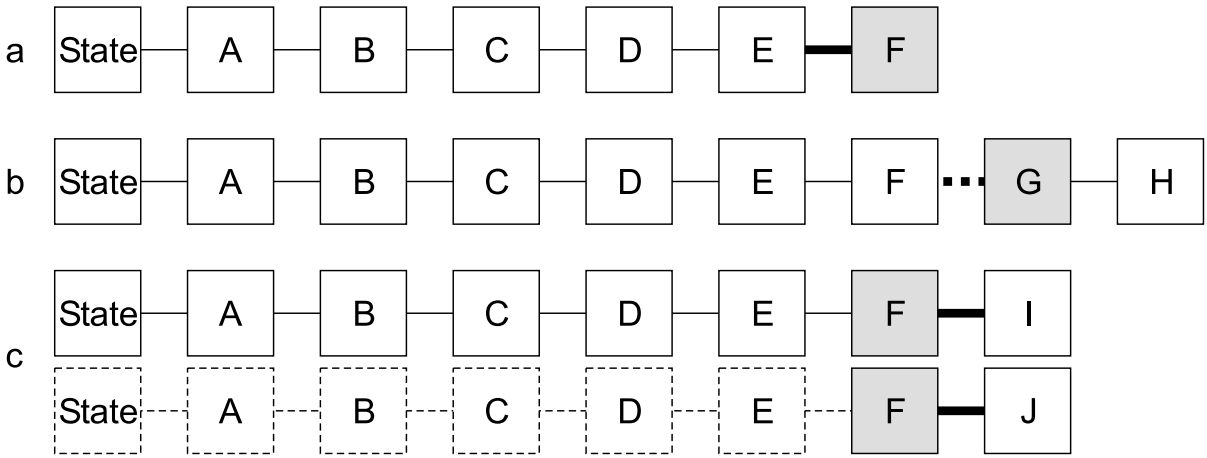

Figure 2.4; Risks of private conveyancing

Anyone can imagine the risks involved in this system, whereby an often ignorant and sometimes malicious person holds such valuable documents. First of all the owner of the land, and holder of the documents, might see the documents destroyed due to some natural disaster or ignorance. It is then no longer possible to prove ownership, and the rights to this land become very weak and hard to transfer. Even worse is the situation in which 'person G' steals the documents from 'owner F'. F can no longer transfer the land in an orderly fashion, and if G falsifies a document suggesting a transfer of the land by 'owner F' to him or her, he or she can then sell the land to an innocent third party (H). H will have

[25] An extra complication can be found in the case that for instance N was the heir of M, and no transfer document was drafted between them. In such a case the fact that N got the right from M through inheritance has to be proven in another way.

a reasonable claim to the land, as does F who –basically speaking– only lost some papers, and not his or her right to the land (see Figure 2.4 sub b)[26].
Another bad case appears when F will duplicate the documents by preparing a second set with falsifications and sell his or her land twice to two different persons (I and J), who will find themselves in conflict with the same claim at first sight (see Figure 2.4 sub c). There is also a serious problem when F wants to subdivide the land, since there is only one set of correct documents. The last major problem is the identification of the land to which the right being mentioned in the documents applies. This is often described in an ambiguous way, leaving ample room for later problems (see § 2.2.5).
Keeping within the framework of private conveyancing, several of these problems can be diminished in severity when the evidence from the documents as such has to be strengthened by other forms of proof, especially by checking if the seller is in actual possession or is recognized as the landlord by the actual occupant (user). This solution obviously does not work very well if there is a multi-tiered system of land tenure in place, in which several persons hold different 'sets of the sticks' that together make up a full ownership right (see Simpson 1976: 7). Only one (or maybe two) of them can then meet the additional criterion of actual possession or recognition by the actual occupant.
For later reference it is worth noting that the situation in much of England in the mid 19th century still mainly relied on private conveyancing, further complicated by a complex, multi-tiered system of land tenure. This was mainly caused by repeated (legal) ingenuity to avoid feudalism and to circumvent successive laws demanding the (expensive) recording of instruments related to the transfer of interests in land (like introducing Equity, the Statute of Uses and leases) (Burdon 1998: 10-23). This complexity of the English land law lasted until 1925 on the British Isles.

2.2.4 Transaction Evidence through Registration

introduction of registers
Instead of leaving the documents in the ignorant and/or malicious hands of the owner-of-the-day, their storage could be entrusted to an independent third party, who will greatly limit the chances of loss and falsification. Such registers of documents have been set up throughout history in many different countries at different places like the office of a notary or lawyer, a court, the tax authority, a local authority or an office especially established to store such documents.
When this is limited to an elementary register, it constitutes the most simple form of registration of deeds, which often has following drawbacks:

a. For one it was not compulsory in many cases to register the deed, although usually a registered deed would get precedence over a non-registered deed or a later registered deed affecting the same land.
b. Furthermore there was usually no uniform system for identification of properties. The description of the land was left to the parties to the deed.
c. Finally, the original register was arranged according to the deposition dates, which made it difficult to search the register to establish if the seller had a good title. (Larsson 1991: 22)

[26] The question how to solve contradictory claims even plays a role in cases when transaction evidence is done through registration. Several systems exist (also see § 3.2.2).

enhancements
In order to improve this situation jurisdictions tried all kinds of enhancements (see for instance Dale/McLaughlin 1988: 23). The first problem (a) could be solved by making the registration of all deeds compulsory, but these rules were not always sufficiently effective, because of limited powers to implement and control the law (Larsson 1991: 22) (as is the case in *Indonesia* and *Ghana*). The second problem (b) was tackled by introducing an unambiguous identification of the subject unit of land (prior to registration), often on a map and with a unique number (see below). To solve the third problem (c) indexes to the main register were introduced.

indexing to trace documents
The first indexes were person-based 'grantor/grantee' indexes, which still form the base of many deeds registries in US counties (compare Dekker 1986b: 219-223). Imagine 'person Ae' wants to sell one of his or her parcels of land to 'person Bb' at some point. Ae claims to have become owner ten years ago when he or she bought the land form 'person Cm'. In the past decade many documents have been registered, and it is very elaborate to go through all of them to find the right document. Some kind of index has to be kept. The most simple one is keeping a list of all documents mentioning the names of both parties; the grantor/grantee index. To make this a bit easier to retrace a separate list can be made for every letter of the alphabet[27], and the appropriate names are written down there:

C

	Grantor	*Grantee*	*Type of transaction*
	Cz	Bq	sale
	Ca	Lv	donation
	Co	Ae	sale
	Ca	Bx	sale
*	Cm	Kk	sale
	Cv	Op	exchange
*	Cm	Ae	sale
	Ck	Mk	sale

Still it is not easy to trace back the right document. Furthermore it is complicated to determine if the two sales by Cm in this case concern two different pieces of land or the same piece of land twice. Even if the related deeds are studied it is questionable if the property description will be such that it will be easy to determine this.

Since the rights, owners, and usage may change but the land remains for ever, the land parcel is an ideal basis for recording information (Dale/McLaughlin 1988: 20). Therefore a better way of tracing back the documents is a system in which a parcel-based index is kept. A list (or cards) of the identified pieces of land (properties) is kept, and the name of the 'owner' is kept connected to each of them. This name is updated after every transfer, with a reference to the document concerned:

[27] If certain letter-combination are very common extra list could be made (for instance for Mc in areas with many Scottish names or Van in areas with Dutch and Flemish names).

(before sale 973)	(after sale 973)
Property nr. 5873	Property nr. 5873
~~Fa~~ sales doc. 303	~~Fa~~ sales doc. 303
~~Cm~~ sales doc. 489	~~Cm~~ sales doc. 489
Ae	~~Ae~~ sales doc. 973
	Bb

This way a quick overview can be reached. Basically this constitutes a simplified picture of most title registration systems (e.g. Germany), as well as the parcel-based deeds registration systems (e.g. 'old' Scotland). In some countries (parts of) the contents of the deeds are copied onto the register, instead of only referring to the place were the deed can be found (e.g. Spain).
The property numbers could be allocated purely administratively, as long as the keeper of the register is convinced the deed deals with a new property, and not with a property which is already contained in the parcel-based index. It is not easy to determine that unless the land is described unambiguously and with regard to its surrounds (see § 2.2.5). The best way to do that is make use of a parcel identifier, to which additional information can be linked as well. In that way something is created that is called a cadastre in quite some countries. Since the information contained in this case is mainly legal, it concerns a *judicial* cadastre. In a similar way one could also create a file for each land unit –once clearly identified– in which all future transaction documents will be stored. In most countries however, the property number is a separate, administrative number assigned by the staff of the registry or the court. It is quite often linked to a parcel identifier that is assigned by the cadastral or survey office. Usually it is possible to combine more than one parcel into one property (see *Austria*). This is especially useful when several adjoining parcels (which might differ in usage) are owned by the same person. Regularly it is also allowed to combine non-adjoining parcels in order to establish one mortgage on the property as a whole. The usefulness of that is greatly diminished in a computerized system.

level of investigation
Once parcel-based indexes or files exist, different legal regimes could be introduced for entering information into them and for the legal status of the information that is included. Originally documents offered for registration will be accepted and stored at face value. Usually a few formal checks are likely to be made before the document will be accepted for registration. This will usually include a minimal set of items that need to be present in the document, and in several systems a check will be made if the person selling is likely to be the owner (for instance by verifying the previous deed which has to be mentioned in this one). Several systems have introduced a rather extensive investigation into the transaction as it is presented for registration. Larsson (1991: 22) calls this 'title investigation'. Böhringer (1997: 174) refers to it as a "strict examination of the entry request in a formal judicial procedure".

legal status of information
(1) The legal status of the information that is included in the registration is limited to just being informative in a basic system. It indicates that the parties have created a legal fact with the intention of having a certain legal consequence, and decided to have it registered. Usually people relying on it, and who do not know of a problem, are regarded to be of good faith (*bona fide*). E.g. 'old' Ghana, some US states.

(2) Often this is strengthened by the fact that registration is compulsory either to affect third parties, or even to complete the transfer (constitutive). In this case non-registration means that (for third parties) the legal consequence did not take place. On the other hand registration does not prove that the legal consequence did take place. E.g. France, the Netherlands.
(3) That proof is included in the last scenario, in which one can rely on the information 'on the register'. Usually this register takes the form of a parcel-based book, in which for each property a given set of items is presented, obviously including the present owner (and other right holders). After the extensive investigation of a presented transaction (as mentioned before), the entry will be made or updated. The level of reliance one can place in the register can still differ from 'public faith' (good until proven wrong; e.g. Germany) to a full guarantee (e.g. Australia). Since contradictory situations can never be totally ruled out, the system is usually complemented by indemnification for the 'loser'. The protection offered (either via guarantee or via indemnification) is restricted virtually always to those who acted in good faith (*bona fide*) and often to those who acted for valuable consideration.

So there are countries in which the moment a new name is entered through the proper procedures there, he or she will become the undisputable owner, even if the transaction as such was not valid for whatever reason. The idea of such a system is that the register reflects the (legal) reality as well as possible, and –to protect the purchaser– one can rely on the entries in the register, which can even be guaranteed (e.g. Germany). Some systems give such an importance to the entries in the register, that the register itself becomes the legal reality, which seems to be an inversion of the original intent of the mirror principle (see § 2.3.1 and 3.3). In many societies operating such a system the owner gets a piece of paper, usually called title certificate, that contains the information that is on the register at the time of issuance of the paper. There are examples from countries where during a transaction the piece of paper is handed over as a representation of the transfer of the piece of land, without the registry being informed of the transfer (like *Indonesia*). One should be aware that possession of the certificate is not conclusive of any right to deal (Burdon 1998: 131 on Scotland). Therefore the use of title certificates is now being abolished (e.g. Alberta, Canada) or questioned (e.g. Australia, Birrell et al 1995: 2-3).

2.2.5 Describing Land Parcels

identification of units of land
Land as such, certainly in its legal meaning, has several characteristics that make it different from any other good. Among these characteristics is the fact that land is immovable, that land is eternal[28] and that land can be treated in units of which the boundaries can be formed in almost any way. Land is, so to speak, a continuum, which (if water is included) covers the whole of the earth.
Since it is the relation between persons and land that is considered here, the question arises which unit of land does this person relate to? This question can not be answered independently of the right which one has in the land and the use that is made of the land. In communities that use land to hunt on, boundaries are often unclear. The land is used extensively, and often natural features (like rivers, mountain ranges or open places) function as the borders of the territories of the hunter (group). Depending on the type of

[28] Land cannot be destroyed in a legal sense, which means no land will be lost, but also that no extra land can be created; which means that there is only a limited amount of land available on the earth (Simons/Franssen 1987: 7).

terrain, the pressure on the land and the relation between different (groups of) hunters, the areas in which different groups hunt might touch or even overlap each other. It is possible that different groups want to use the land exclusively, and in some way will formulate a boundary between them (this can be through warfare, but also in peaceful ways). It is very likely that borders will be set in high interest areas, but not in other places.

intensification of land use

In addition to the land a society might use to hunt on, the society will often have some land where the dwellings are situated and some food might be grown (agriculture). If the society is not nomadic, the dwellings and the fields around it, will be of a permanent nature. As long as these villages are in the middle of the hunting area, no external conflicts arise here. The question can be limited to the internal use of the land in and around the village by the members of the society. Many societies reached a stage where the rights to the dwellings and the land are not limited to use rights only, but have grown into a stronger, more individualized form of land tenure, often referred to as ownership. Once this moment has been reached it is necessary to delimit the unit of land over which one person (or family) holds such rights.

In most cases the limits of a unit of land coincide with different usage of this unit compared to the next unit. And the way land is used is reflected visibly in the terrain. Thus looking at topographic features is a first and important way of getting an idea of the limits of a certain unit of land (although it does not supply absolute certainty). Some types of land use lead to durable marks in the terrain. Think of walls that are erected, strong fences put up, asphalt or other road materials and of course buildings. These marks are visible for both adjacent owners, and thus if they are incorrect the one who stands to lose from it has a chance to react immediately.

There are however also cases where the limits do not become clear from such usage patterns. Especially in pastures and forests, the topography stays the same for an extensive area. Such areas, however, are very often not owned individually but used through some kind of group right. Therefore the problem of limits in these areas is primarily focused on delimiting such an area from that of another group or from the more individually owned part of the group's area.

boundary markers

Of course the limits of individual units of land can be made visible in the terrain by putting up special boundary markers. Many societies use durable materials (stones, iron or concrete) to make such markers, which are also quite large and put into the ground at a considerable depth. There are also societies who use certain natural features for this, for instance through planting a tree at a boundary point (see *Ghana*).

For both visible usage marks and specially installed boundary markers one problem remains, durable does not mean completely eternal nor totally immovable. Even in the Bible, in the Book of Job, it is said that 'some remove the landmarks' (Job 24, verse 2).

Thus people have sought methods to strengthen the stability of the boundaries of their land. In close knit societies, there is a lot of common knowledge. This knowledge would be enough to notice the removal or reallocation of a boundary in any non incremental case.

surveying and mapping

Many societies have, however, lost that level of intense interrelation and common knowledge, and have to rely on other sources of evidence. Once the art of measuring is available in a society, surveying techniques will open new ways for this.

The most simple method is measuring the distances between all boundary points relative

to one another. If one is moved this will be easily traceable through remeasuring these distances. If not too many points have been tampered with, it is even possible to reconstruct their original position. A further improvement can be reached when not only distances are measured, but also angles or bearings are included in the survey.
Another basic technique to give extra assurance to the points is the use of a graphic representation of the unit of land on paper. These drawings can be made only depicting the configuration at large (not to scale, concentrating on the topology), or –when combined with certain survey techniques– giving a reliable overview of the unit of land at a certain scale. In both cases the plan of the parcel can be made for any given parcel alone, or can be in the form of a map containing all parcels covering the whole of a certain area (often one village with its surroundings). Dale (1993: 33) stresses that each individual parcel survey needs to be related to the adjoining properties. This is something not always remembered in practice (for instance *Indonesia*).
There have been societies which have introduced their area covering maps with the use of a special measuring instrument, the plane table, which leads to a graphic representation right away (most original cadastral surveying in the early 19th century was done this way). But in most other cases the information collected during the survey has to be computed and converted to the map or plan with use of mathematics. It is also possible to store the information on the boundary points as a set of coordinates in a given system in a numeric way, without even plotting those onto a map. Many countries are introducing national coordinate systems as a reference network for all surveying activities, including cadastral surveying. Although there are certain benefits from this, it is doubtful if these benefits for a system of land registration alone will be enough to compensate for the costs, especially when one is trying to get a system running fast.

parcel identification
From the above it became clear that it is possible to make the limits of units of land visible in the terrain, either through the usage patterns or via specially erected markers. In order to safeguard against accidental or deliberate displacement of the markers, surveying and mapping techniques can be used. But how to know which parcel is being talked about at any given time? In addition to pointing to the parcel on the map, it is very useful to identify this parcel in such a way that it can be cross referenced easily with administrative information (like who is the owner). “An identifier is a graphic symbol or set of symbols associated with a particular entity (e.g. natural person, corporation, land parcel) and is used to identify data relating to that entity. ... The parcel identifier does not describe the parcel; rather it is used to index and identify data that refer to that particular parcel.” (Moyer/Fischer 1973: 4-5)
Societies have developed different identifier systems[29]. In relative empty, large scale areas a rectangular system can be used. This was done from 1785 in the (Western) US through the Federal Rectangular System (FRS), which is based on quadrants of six by six miles. For every state an origin is chosen, with corresponding meridian and base-line (northwards meridians come closer together, so the ‘quadrants’ become smaller, but this was no problem for late 18th century surveying precision). Numbered quadrants along the meridians are called ‘township’ and along the base line ‘range’. The townships are subdivided into sections of one mile by one mile, each identified by its position within the larger ‘township’ (numbered 1 through 36 in a set order). One section could be identified as ‘Section 12, Township 4 North, Range 3 West’. Even more refined quad-tree like subdivision numbering

[29] See for instance Dale/McLaughlin 1988: 39-40; the postal street address is widespread (Dale 1993: 34).

systems are used. This could lead to a 20 acres rectangular defined as 'W½ of NE¼ of NW¼ of Section 12, Township 4 North, Range 3 West', measuring 20 acres. (Dekker 1986b: 227-230) This is however not very convenient for areas with non-systematic parcellation, or where natural features run haphazardly through these parcels.
Several societies have never introduced a comprehensive numbering system, but have tried to get by with local descriptions and some reference to later sub-division plans. Other societies which have no area covering (index) map, tend to give out numbers in the order of plotplans brought to the attention of the number-issuing authority. This system does not completely protect against the overlap of parcels which are depicted in individual plans, even if the plots are numbered (see *Indonesia*).

Societies which use an area covering (index) map, usually have developed unique numbering systems for the parcels as well. In most cases for every sub-area (usually coinciding with a traditional size map sheet, or an administrative area of about that size), a name and/or letter combination is given. Within this sub-area the parcels are numbered. There are different systems used to give (new) numbers to subdivided parcels (see § 3.2.3). Some work with sub-numbers and maintain the relative logic of the numbers, whereas others give out new numbers and lose the logic of the numbers through time. These parcel identifiers can be used relatively easy as a reference between the map and the administrative records. It is not so important which system is used, as long as it fulfils the crucial elements of the uniqueness of the parcel identifier and the effectiveness of its use in extracting details of ownership, tenure and value (Dale 1993: 37). Identifiers that are straightforward and mainly number based are advantageous when computers are being introduced.

2.3 Principles and Features

registration of land
Registration is essentially a written record which is a reliable means of ensuring accurate knowledge of facts after they have occurred, since it is relatively permanent and unalterable. The device is susceptible of infinite variation. Land registration can, as said before, be described as 'the process of recording legally recognized interests (ownership and/or use) in land' (McLaughlin/Nichols 1989: 81-82). The preceding paragraphs looked at appearances of land registration, mainly by taking partial perspectives of the system of land registration. To use systems approach terminology (see chapter 4), a subset of elements was looked at and those were studied from one or a few aspect disciplines. Now a few existing sets of principles and features often used when describing (certain types of) land registration will be looked at.

2.3.1 Principles

Kurandt describes four land registration principles:
- speciality principle
- booking principle
- consent principle
- publicity principle (trans. G2 of Kurandt 1957: 17-18)

He sees them as the base for the (German) system of title registration. Henssen uses the same list (although he puts the speciality principle at the end) as the four basic legal principles of any type of land registration. He describes each of the principles as follows:

"The **booking principle** implies that a change in real rights on an immovable property, especially by transfer, is not legally effectuated until the change or the expected right is booked or registered in the land register.
The **consent principle** implies that the real entitled person who is booked as such in the register must give his consent for a change of the inscription in the land register.
The **principle of publicity** implies that the legal registers are open for public inspection, and also that the published facts can be upheld as being more or less correct by third parties in good faith, so that they can be protected by law. ...[30]
The **principle of speciality** implies that in land registration, and consequently in the documents submitted for registration, the concerned subject (man) and object (i.e. real property) must be unambiguously identified." (Henssen 1995: 7)

Whereas Henssen says that these principles can generally be recognized in different systems, they are more useful as a base identifying areas of differences between systems. Even in his own text it becomes clear that the principle of publicity is interpreted very different in different countries (and times). The same goes for the other principles. For instance in most US-jurisdictions the change of a right is not depending on its booking, although in practice most changes are booked (mainly due to the fact that mortgage banks demand this). The consent principle is not explicitly applicable in *the Netherlands*. The

[30] Concerning the public inspection, various countries operate different systems from the land register being open for inspection by anybody who is interested, anybody who has a legally recognized interest, to the owner or anybody with his or her permission. Henssen identifies a need to have open registers.

registration authorities are not even allowed to refuse a deed when the transferor is not registered as the previous owner (in practice notaries make sure this is the case before completing the deed).

Contrary to the above principles, which put the focus on an activity, there is another list of more result oriented (fundamental) principles. This list is often found in Anglo-Saxon literature, and attributed to Ruoff. He claims that registration of title succeeds or fails according to the degree with which the local law and local administration accord with three fundamental principles:

- mirror principle
- curtain principle
- insurance principle.

"(1) The *mirror principle* which involves the proposition that the register of title is a mirror which reflects accurately and completely and beyond all argument the current facts that are material to title. With certain inevitable exceptions [such as overriding interests] the title is free from all adverse burdens, rights and qualifications unless they are mentioned in the register.
(2) The *curtain principle* which provides that the register is the sole source of information for proposing purchasers who need not and, indeed, must not concern themselves with trusts and equities which lie behind the curtain. ...[31]
(3) The *insurance principle* which is that, if through human frailty (in the Registry), the mirror fails to give an absolutely correct reflection of the title and a flaw appears, anyone who thereby suffers loss must be put in the same position, so far as money can do it, as if the reflection were a true one. (Yet no provision is made for indemnity in Malaysia, the Sudan or Fiji, each of which would claim to operate an effective register of title.)" (Simpson 1976: 22)

Both sets of principles can only be achieved by having them included in the relevant law (legislation and/or case law/jurisprudence), but also give some theoretical background on how to perceive land registration (esp. title registration).

2.3.2 Features

In addition to the four land registration principles, Kurandt also gives a set of four features one can expect from (the German) title registration:

- clarity
- correctness
- legal security
- understandability (also for laymen) (trans. G3 of Kurandt 1957: 17)

[31] Simpson adds between brackets "Some knowledge of English land law is need for a proper understanding of this principle, and of course we must not forget that inspection of the land is always necessary, as also is inquiry of local and other public authorities with regard to such matters as planning proposals."

Another Anglo-Saxon list gives seven features which should be combined in a (well functioning) system of registration[32]:

- security
- simplicity
- accuracy
- cheapness
- expedition
- suitability to its circumstances
- completeness of the record (Dowson/Sheppard 1956: 71-72, Simpson 1976: 17).

A related list can be found in the FIG Statement on the Cadastre, which gives "a number of well recognized criteria for measuring the actual or potential success of a Cadastre. These criteria include:

a) Security: The system should be secure such that a land market can operate effectively and efficiently. Financial institutions should be willing to mortgage land quickly and there should be certainty of ownership and parcel identification. The system should also be physically secure with arrangements in place for duplicate storage of records in case of disaster and controls to ensure that unauthorized persons cannot damage or change information.

b) Clarity and Simplicity: To be effective the system should be clear and simple to understand and to use. Complex forms, procedures, and regulations will slow the system down and may discourage use of the system. Simplicity is also important in ensuring that costs are minimized, access is fair, and the system is maintained.

c) Timeliness: The system should provide up-to-date information in a timely fashion. The system should also be complete; that is all parcels should be included in the system.

d) Fairness: In development and in operation, the Cadastre should be both fair and be perceived as being fair. As much as possible, the Cadastre should be seen as an objective system separated from political processes, such as land reforms, even though it may be part of a land reform program. Fairness also includes providing equitable access to the system through, for example, decentralized offices, simple procedures, and reasonable fees.

e) Accessibility: Within the constraints of cultural sensitivities, legal and privacy issues, the system should be capable of providing efficient and effective access to all users.

f) Cost: The system should be low cost or operated in such a way that costs can be recovered fairly and without unduly burdening users. Development costs, such as the cost of the adjudication and initial survey, should not have to be absorbed entirely by initial users. Low cost does not preclude the use of new information technologies, as long as the technology and its use is appropriate.

[32] The original list of 6 features is contributed to Fortescue-Brickdale, Chief Registrar in London at the beginning of the 20th century; the 7th feature was added by Dowson and Sheppard (1956: 72).

g) Sustainability: There must be mechanisms in place to ensure that the system is maintained over time. This includes procedures for completing the Cadastre in a reasonable time frame and for keeping information up-to-date. Sustainability implies that the organizational and management arrangements, the procedures and technologies, and the required educational and professional levels are appropriate for the particular jurisdiction. “ (FIG 1995: 19-20)

These sets of features could also be dubbed ‘expectations’. It is what can be expected from a (well functioning) system of land registration. It depends mainly on the administrative layout and day-to-day operation if these expectations can be met, of course within the limits of the law and other preconditions. Even though the features are formulated rather vaguely, the FIG calls them ‘criteria’ (to be able to measure them obviously more quantitative data is needed, as is now being worked on through benchmarking (Steudler et al 1997)).

These features are extremely important for the system of land registration. Trying to get a (qualitative) sense for these features forms an important part of the case study (see chapters 5 and 6). This is included in the case reports as one of the organizational aspects, called “daily practice versus 'law in books'.” Looking at the different features can be replaced by looking whether the system of land registration as a whole is functioning well and achieving its goal(s). This can best be summarized with the ‘super’-feature *trustworthiness* (which will later be dubbed an emergent property of systems of land registration (see § 4.2.2)). People who trust and rely on the system, will use it. Therefore usage can be seen as a critical factor in determining if a system is effective or not, as Barry (1999: 82) discusses with regard to cadastral systems.

2.4 Concluding Remarks

Acknowledging the terminological inconsistencies existing in the field, the choice was made to use land registration as the central term for this study over land recording, cadastre or land administration. The main reason for this is the implicit focus it gives towards the role of legal protection of owners and purchasers of land rights.
More or less individual rights in land emerged in most societies once land became scarce enough. Unlike rights in movables, these rights can not be easily traded. It is not possible to physically hand the property over from the seller to the purchaser. Therefore a more abstract way of doing this is necessary. Four types of transaction evidence can be distinguished (oral agreement, private conveyancing, deeds registration and title registration). The last two can be seen as forms of 'land registration' (also see § 3.1). Several variations are possible, e.g. with regard to the consequences of not registering, existence of a parcel based index, the legal meaning of the information, the ease of changing the information, etcetera. Furthermore it is not possible *prima facie* to see what is the exact object to which a right applies; what belongs to the property. The boundaries of this have to be determined and the object, often called parcel, has to be identified. Usually surveying and mapping techniques play a role in this, often combined with physical features (like boundary markers) in the field.
The historic developments have great impact on existing systems of land registration. Different countries went through similar phases of increased scarcity of land in different times and at different speeds. This led to different technological possibilities being available to meet the demands of the emerging land market. Also social and political circumstances influenced the exact outcome.
Still several sets of land registration principles and features are identified in the literature. One set deals with the process of recording land rights, another set deals with the meaning of the information on the register, whereas yet other sets contain what could be called the expectations societies (should) have of a well functioning system of land registration. In the end only a trustworthy system of land registration can succeed.

3 CLASSIFICATIONS OF SYSTEMS OF LAND REGISTRATION

Quite a few classifications of systems of land registration can be found in literature. Several will be described in this chapter. Most of the classifications put emphasis on a relative detail, neglecting several other characteristics of a given system. When comparative discussions are based on these one-dimensional classifications, they have a tendency to quickly turn into almost emotional debates. Based on an often rather incomplete picture, systems are quickly acclaimed or denounced.
In § 1 the focus is on the most often used classification of title registration versus deeds registration. In addition to describing it, its limited usability is discussed as well. More fundamental critique can be found in (Zevenbergen 1994) and (Zevenbergen 1998a).
In § 2 the following other classifications are introduced[33]:

- negative versus positive systems;
- race versus notice statutes;
- parcel identification;
- fixed versus general boundaries;
- systematic versus sporadic adjudication;
- organization of registry and cadastre.

The paragraph concludes with explaining the limited importance of the differences, especially the one-dimensional, oversimplified classifications. To overcome those a systems approach, bridging the different disciplines will be introduced in the next chapter.
In § 3 an explanation for the differences is sought in looking at abstract concepts versus reality on the ground.
The chapter ends with some concluding remarks (§ 4).

[33] Bogaerts and Zevenbergen (2001) additionally discus the following classifications which did not really fit into the technical, legal or organizational aspects as used in this study:

- centralized versus decentralized cadastral system;
- fiscal versus legal cadastre;
- financed by government versus self-supporting.

3.1 Title Registration versus Deeds Registration

3.1.1 Basics of Title and Deeds Registration

basic descriptions
In classifying land registration systems the distinction that is usually made first is between registration of title[34] and registration of deeds. Legally speaking the most elementary difference is that "deed registration is concerned with the registration of the legal fact itself and title registration with the legal consequence of that fact." (Henssen 1995: 8). Most authors, though, take several additional aspects into account. In the same publication Henssen describes both systems in a way which is very similar to the definition given at the 1972 Meeting of the *Ad Hoc* Group of Experts on Cadastral Surveying and Mapping (UN 1973: 25, McLaughlin/Nichols 1989: 81, Larsson 1991: 17-18).
In general there appears to be no short definitions of either one of these types of registration. Usually, depending on the chosen perspective, one type is described and the other type is confronted therewith. An important reason for lack of such short definitions is that it is usually tried to combine two things into them. On the one hand there is the theoretical desire to describe two ideal types, which are each others extremes. On the other hand there is the desire to have the definitions fit several existing systems of land registration that operate in practice. Those systems in practice, however, never fully fit an ideal type, especially since the definition needs to take several aspects into account which can hardly be fitted into a one-dimensional classification. This can even be seen from this first introduction. In the first description cited the emphasis is on the item that is registered, whereas in the descriptions in the box the question of evidence is added to it (compare § 2.2.4).
In the next two subparagraphs title registration and deeds registration as usually described in literature are further introduced, including some of the mix of theory and practice. In § 3.1.4 some highlights from the debate on the issue are given.

Title registration
A title registration system means that not the deed, describing e.g. the transfer of rights is registered but the legal consequence of that transaction i.e. the right itself (= title). So the right itself together with the name of the rightful claimant and the object of that right with its restrictions and charges are registered. With this registration the title or right is created.

Deed registration
A deed registration system means that the deed itself, being a document which describes an isolated transaction, is registered. This deed is evidence that a particular transaction took place, but it is in principle not in itself proof of the legal rights of the involved parties and, consequently, it is not evidence of its legality. Thus before any dealing can be safely effectuated, the ostensible owner must trace his ownership back to a good root of title.

Descriptions given by Henssen 1995: 8

[34] "which could be more aptly labeled 'title by registration'" (Simpson 1976: 13).

3.1.2 Title Registration

main principles
Land registration can be refined more and more (see § 2.2.4 and 2.2.5). The most refined system of land registration can be described as the ultimate title registration.
In a system of title registration one can immediately see who is the owner of certain property. The register therefore needs to be 'parcel based', and these parcels are well defined (usually through 'title plans'). Each time a legal fact occurs that aims at changing a right holder to a parcel, it is not the documentary evidence ('deed') of that fact as such that is registered. A deed or form saying who is giving up rights and who is gaining them is presented to the registrar. The registrar will, after thorough checks, change the name of the right holder listed with the parcel, dispossessing the previous right holder. Once this name has been listed there as the new right holder, this person *is* the right holder by law. Any existing problems with his or her right to the parcel or in the transfer are 'repaired' once the registrar has accepted the new legal situation. If anyone who is of good faith will lose his or her rights because of this, he or she will be compensated for the loss.

Therefore the register is supposed to reflect the correct legal situation ("mirror-principle"), and there is no need for further (historic) investigation beyond the register ("curtain principle"). Whatever is registered is guaranteed to be the truth for a third party of good faith and a *bona fide* possessor who does not appear on the register will be compensated ("insurance- or guarantee principle"). (Henssen/Williamson 1990: 31; compare § 2.3.1).

Systems of title registration exist in many varieties. Especially with regard to the "insurance- or guarantee principle" numerous variants exist. Furthermore there are great differences in the ways the parcels are described and identified. In some cases title plans are just copied from existing large scale topographic maps (like the English and Welsh Ordnance Survey maps). Others use precise boundary surveys which are laid down in a numeric cadastre (like the Austrian 'Boundary Cadastre'; see *Austria*). Many intermediate variants exist.

sure evidence
"Registration of title to land is an authoritative record kept in a public office of the rights to units of land as vested in some particular person(s) or body for the time being and of the limitations of such rights." (Dowson/Sheppard 1956, 74). "It is considered to be a sure evidence of establishing title to land. ... An inspection of the register shows, at all times, the legal situation of the land. Consequently any person dealing on the evidence of the register need have no fear of ejection. The registered proprietor, and he alone, can dispose of his rights." (Larbi 1994: § 8.8.2). Therefore "registration of title acts as a warranty of title in the person registered as owner and bars adverse claims." (Simpson 1976: 106-107).
On the other hand the title register "operates as the only mechanism for the transfer of rights in question. In other words, by entering the new holder's name on the register, the previous owner is dispossessed" (A.W.B. Simpson 1986 as quoted by Palmer 1996: 65).

little need for investigations
What this would mean in reality can be described as follows: "The basic idea of registration of title, the English form of land registration, is to reflect on a register those matters concerning land that will be of importance to a potential purchaser and that otherwise would only be discoverable by inspection of the land, enquiries of the occupants and perusal of a miscellany of documents" (Fairbairn 1993). Nevertheless even under systems of title

registration there are so-called 'overriding interests'. This usually include those tenancy or lease agreements that can not legally be registered. In *Ghana* this even includes actual occupation.
"The title register is intended to be the final authority regarding the validity of a title, thus eliminating the need for subsequent investigation of chains of titles. Achieving such finality required several innovations. Titles could only appear on the register after their validity had been examined by registrars. Organizing title registries around parcels, rather than people (i.e., grantee-grantor system of deeds registries), helped to clearly identify who held the rights to a particular parcel." (Palmer 1996: 64, Simpson 1976: 15-23)

active registrar
A registered title in a title registration is indefeasible (and guaranteed) in most cases. To make this possible the information entering the register has to be thoroughly checked before registration is completed. For that a system of title registration needs an active registering institution. The head of (a branch of) this service is usually dubbed registrar. This registrar will update the title register only after he or she has assured him- or herself that the conveyance that is presented to him or her has really taken place. The new situation has become almost indefeasible because of this and he or she who trusts on it will be protected to a large extent.

land based
Another important characteristic of registration of title is found in the definition attributed to Hogg which puts the emphasis on the question if the registration (or recording) is done in relation 'to some particular land', thus putting the emphasis on the question of parcel identification, and what is often referred to as a parcel based, and not person based register.
Lawrance considers the invention of title registration "a simple one, though far-reaching, for in essence it merely involved a change in the unit of registration. In a system of registration of deeds it is the deed itself which is registered. (...) In a system of registration of title, however, it is the land parcel itself that is registered, thus effecting "the transference of primary attention from the mobile, mortal, mistakable persons temporarily possessing or claiming rights over patches of the earth's surface, to the immovable, durable, precisely definable units of land affected and the adoption of these as the basis of record instead". The register itself is proof of title and its correctness at all times is usually guaranteed by the State." (Lawrance 1980: 2-3).

five features
Lawrance gives five features of title registration:
- it constitutes two separate, but related, records: an unambiguous definition of all land parcels (usually a series of maps, sometimes separate plans), and a descriptive record giving all relevant information;
- title depends on the act of registration, not on documents or on judicial orders; dealings are effected by an entry on the Land Register, and by no other means;
- the Land Register consists of folios for each parcel, with three sections (on property, proprietorship and charges);
- registration may be applied selectively to particular areas, but compilation is compulsory;
- an important objective is to render unnecessary the trouble and expense of repeated investigations of title; thus anyone who purchases on the register for valuable

> consideration and in good faith from a registered proprietor acquires an indefeasible title, notwithstanding any defect in the vendor's title. (Lawrance 1980: 4).

three groups of title registration
Countries which operate a system of title registration are often divided into three groups, even though this reflects more the differences in land law, than in registration principles (Henssen 1995: 8):

a. the English Group
b. the German/Swiss Group
c. the Torrens Group.

The differences can be mainly found within the scope of the technical aspects, and more precisely with regard to the way parcels are described. In the English Group use is made of the large scale topographic maps, in the German/Swiss Group use is made of parcel-based cadastral maps, and in the Torrens group use is made of isolated survey plans (Henssen 1995: 8).

(a) The English Group includes a.o. England, Ireland, some Canadian provinces, Nigeria (Henssen 1995: 8). This system of title registration fulfils almost all the features that were given above. The emphasis of the system lies with the legal aspects, since it does not involve a cadastre and knows very little boundary surveys. Implementation goes through sporadic registration, which is mandatory in certain cases (like a sales contract). The process does not ask for preparing an index map of the area before registration can commence. It uses existing large scale topographic maps for this. When combined with the use of 'general boundaries' (like in the British Isles) this allows for a quick and relatively cheap start. Now that completion is coming nearer in England and Wales, more attention is given to making (digital) area covering index maps showing all parcels. That is also necessary to be able to fulfil the role of "juridical cadastre" within NLIS (national land information system). The Land Registry is the central agency. It is primarily an administrative body, although it adheres to the ministry of justice, and the Chief Land Registrar has some judicial powers. The title plans are prepared by registry staff, but usually derived in the office from existing Ordnance Survey maps.

A lot has been written on the English system (e.g. Simpson 1976: chapter 3, Pryer 1993). Conveyancing in mid-19th century England was a perilous activity. Private conveyancing was only regionally replaced with a very basic deeds register, which used a closed register. Under the pretense of privacy-protection, the secrecy this led to added another important problem to the system. The use of a secret register (also for the title register) lasted until 1990. Another speciality of the situation then and there was the existence of a multi-tiered system of land tenure, mainly designed to avoid feudalism and (expensive) recording (see § 2.2.3). "English common law enabled title to land to be acquired without the consent of the previous owner by a process that did not have a divesting effect, i.e., the system was a multi-titular one and a number of people might have title to the same property. In contrast, Roman law systems were uni-titular systems since a person could only acquire a title to property through a process that divests the former holder –there is only one root of title." (Palmer 1996: 64-65).
Introduction of land registration (and in particular of registration of title) does usually aim at leaving the substantive land law as it is (see *Ghana*). Nevertheless for the introduction of title registration in English common law jurisdictions to be successful, there is the need

to accompany it by certain simplifications of the land law. The introduction of title registration in England could only really go ahead after 60 years, when the 1925 legislation swept away enough of the "rubbish" (Simpson 1976: 75). It could be said that the adoption of a title registration system in an English common law jurisdiction effects a move away from a multi-titular system to a uni-titular one (Palmer 1996: 65).
Even though English land law has been exported to most of the many territories that have been under British rule throughout history, these problems are only repeated there to a certain extent. Virtually all territories managed to introduce registration of deeds in an open and more effective way than England did (Simpson 1976: 92). The problem of the multi-titular land law, however, can still be found in most territories, since the 1925 simplification was usually not implemented there[35]. In addition to that in many of these territories pre-existing customary land tenure arrangements operate in addition to this English land law (sometimes parallel, sometimes intertwined (see *Ghana* and Mulolwa 2002)).

Theoretically conveyancing under a title system can be done by the parties themselves. They do not need to use any legal expert and can fill in the prescribed, relatively simple forms themselves. The forms are used as the base for checks by the registrar, after which the registered rights are guaranteed. In practice the proclaimed advantage of 'doing it yourself' is limited very much. The transfer might be the result of a complicated, underlying contract, for which most people need legal advice, especially when both parties are on a very different level of legal competence (for instance a private person buying from a professional developer). Often financial complications (related to mortgaging and taxes) further complicate matters. Finally, these days planning regulations and land control generally create further difficulties (Simpson 1976: 16). In combination with fixed price conveyancing very few people in England do their own conveyancing, and professional counsel will be needed in virtually all cases.

(b) The German/Swiss group includes a.o. Germany, Austria, Alsace-Lorraine, Switzerland, Egypt, Turkey, Sweden, Denmark (Henssen 1995: 8). In many of these countries the transfer to this system was simplified by using good cadastral surveys and a well functioning deeds registry. This scenario could surely be applied to the German and the Austrian-Hungarian Empires (and Switzerland) in the late 19th century. Their territories can now be found not only in Germany, Austria and Switzerland, but also in among others Croatia, Czech Republic, Hungary, Slovakia, Slovenia and in parts of Poland and Romania. In most of these areas the land registration system retained its main characteristics even when jurisdictions, borders and even social-economical principles changed.
The title register is called 'land book' (*Grundbuch* in German) and very similar in structure to the land registers from the previously described systems. A difference exists though, where this system usually does not give a real state guarantee to the registered owner, but only supplies *öffentlicher Glaube* to the register. That means that the right holder is protected by 'public faith', but that counter-claims can be lodged (within a certain period) when one can prove a better right.
In most of these countries the parties can not prepare the base documents for application by themselves. Usually a notary has some involvement (which could be mandatory 'notarial deeds' or the 'notarization' of the signatures). Sometimes lawyers can be used as professional experts as well. In Austria the few deeds (with approved signatures) that are

[35] For instance in Ontario (Canada) the Statute of Uses 1535 still applies (Burdon 1998: 66).

registered by the parties themselves have a far larger chance of being rejected (see *Austria*). The work to be done in these systems of land registration is divided among a lot of parties, both in the public and the private sector. The *Grundbuch* is usually kept within the courts; officially by special 'land book judges' (*Grundbuchrichter*), but in practice mainly by specialized support staff (*Rechtspfleger*). The documents that have to be presented to the courts must be seen by legal private practitioners (notaries or lawyers). The cadastre as such is kept by survey departments. At least a part of the cadastral surveys, however, is usually performed by another group of private practitioners (licensed surveyors). All of them tend to perform their functions correctly, and when they cooperate well the system works fine. Good cooperation is realized in Austria by the use of one common database by those involved. An even better base for this cooperation would be merging registry and cadastre into one organization, as is the case in Czech Republic, Hungary and Slovakia. Most other countries, however, find it very important that the registry is kept within the realm of the independent and legally well trained judiciary[36], making such a move impossible (see *Austria*).

(c) The Torrens Group includes a.o. Australia, New Zealand, some provinces of Canada, some parts of the USA, Morocco, Tunisia, Syria (Henssen 1995: 8). The Torrens system has become very famous. Sir Robert Torrens managed to introduce the Real Property Act in 1858 in South Australia. He simplified much of the traditional English common law, and did away with the difference between law and equity and with feudal property law. He also ousted lawyers from the conveyancing process. Professional advice could not be completely missed and therefore landbrokers were introduced in 1960. Hofmeister and Auer state that "the negative view on any legal advice on conveyance by Torrens, should be regarded an exaggeration." (trans. G4 from Hofmeister/Auer 1992: 14).
"Basically the Torrens idea was that records of the sort normally kept by any competent land office in respect of Crown leaseholds should also be kept in respect of freehold grants. It was a very simple idea to comprehend; moreover it was essentially feasible. ... A title good at the time of grant could easily be kept good by efficient record backed by law." (Simpson 1976: 71).
But what about bringing old titles under such a system? There was no automatic routine for bringing onto the register old titles, granted prior to the establishment of the register in South Australia. A deficiency which was not remedied a century later, leaving numerous estates being conveyed under the 'old' system. And it remains most difficult to convert operational deeds registration to title registration (McLaughlin/Williamson 1985: 96). Therefore two types of registration legislation will normally co-exist, one regarding the 'old' system and one regarding the 'new' system. (Larsson 1991: 23, see *Ghana*). For a long time it was voluntary to bring old titles under the new system, and the advantages of the Torrens system did not suffice to let this happen. Even in the 1950s, more old system titles were created through subdivision than conversions applied. "If this title was good, he derived no immediate benefit from registering it but only the future advantage of reducing the cost of investigation should he come to deal with it again. If the title was bad or doubtful, then the last thing the proprietor wanted was to have that disagreeable fact

[36] This is usually defended with reference to article 6 of the European Convention on Human Rights, which says that any criminal and private law decision should be open to a court decision. Since the direct impact that a decision to register or not will have, they see it as necessary to let the court itself take the primary decision, and not have an administrative body take the primary decision, which one can appeal in a court when necessary.

officially disclosed." (Simpson 1976: 72) In a 1957 report the question was even asked "What is wrong with the Torrens System which makes it necessary to compel Old System owners to accept its benefits?" (Baalman 1957 as quoted by Simpson 1976: 72-73). More recently many laws were amended in such a way that conversion will be mandatory on the next transaction.
Nevertheless the Torrens system of land registration as such quickly spread around after 1858. Within a few years the other Australian provinces and New Zealand introduced similar, but not identical, systems. It can be even argued that the 1862 land registration law for England was based on it (although one could also say Torrens was influenced by the English 1857 Report (and its predecessors)). Hofmeister and Auer, however, take the opinion that the English implementation of the Torrens system has been diluted by the courts (Hofmeister/Auer 1992: 14). Furthermore the system was introduced in various jurisdictions in North America, although not very concise and more piecemeal. In several of the Canadian provinces this was a success, but in the United States it was not. The 1895 Illinois Torrens Act was held unconstitutional by the State Supreme Court on the ground that it conferred judicial power on an administrative officer, contrary to the doctrine of the separation of judicial and executive power. In order to repair this Illinois introduced 'judicial determination of title' before registration, but this made it very expensive and is one of the an important reason for the failure of the system in the United States. (Simpson 1976: 87)
The argument used by the court is comparable to that used in the German/Swiss group (discussed above) to have the title registry as a part of the court. In a 1938 study on registration in New York the conclusion is reached that "Registration affords greater title security and ease of transfer than any method dependent on recordation, but it does so at a cost generally deemed prohibitive in this country." (Simpson 1976: 88-89). Even though there might be some ulterior motives involved here –as Simpson suggests[37]– this correctly points at the contradiction that can be found when trying to solve the principles of high security and quick changes at the same time (Twaroch/Muggenhuber 1997: 3).

disadvantages of registration of title
As Palmer (1996: 64) puts it "Registration of titles (sometime called the Torrens system) is viewed by some as a means of overcoming the defects of registration of deeds". When title registration succeeds in being a system that aims at combining security, simplicity, accuracy, cheapness, expedition and suitability to its circumstances (Dowson/Sheppard 1956: 71) this might be true. But in reality registration of title has disadvantages as well.
"The main disadvantages are that it is complex and elaborate and requires highly skilled personnel. It requires high initial capital outlay to start the system, especially in economies where there are no up-to-date cadastral surveys." (Larbi 1994: § 8.8.2).
Under registration of title the registrar has to check both the formal requirements and the validity of the transaction itself before it can have the intended effect of transfer of title. This might take some time in which the parties are in a kind of frozen situation which can cause problems, especially when it lasts long[38].

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[37] The existing system of title insurance and the Torrens' system more or less exclude each other, and many American authors seem to favor the former (compare Simpson 1976: 88-90).

[38] In some countries many input documents were not accepted at all and the old situation was maintained in the register, even though the transaction took place in an economical sense. Due to such frozen titles a complete renewal of the land registration was necessary in Tunisia, because the title registration was not a reflection of reality.

In some cases too great devotion to the principle of indefeasibility of title can cause problems for redress in case of acts or omissions of others. Rectification has only limited application. There is also the twin remedy of indemnification. (Pryer 1993: 70) Registration of title does transfer titles in cases where the general rules of the law of contract indicate that the intended transfer should not succeed. Somebody will be victimized by that. That is why the registrar will make checks before accepting the deed and changing the title register. Still in some cases someone will lose something because of this principle. That is why there is usually the insurance principle, to reimburse the loser in these cases through the registry. Under registration of deeds the loser (usually another) can attempt to get relief through a normal civil action or tort action. The law could be adapted in such a way that the problems concerning the title of the seller are limited only to the first purchaser. Third parties, who might purchase later from our present purchaser, will then be protected when they rely on the registers. Usually the person losing something because of this has had the time and possibility to correct this. Such a system will allow transactions between two parties to be solved according to normal rules of the law of contract, until the purchaser has sold the property again (see *the Netherlands*). This way there is no need to introduce land registration law that discards general principles of the law of contract in all land related cases. This makes it much easier to ascertain that the land registration law fits in with the rest of the law.

3.1.3 Deeds Registration

main principles
Registration of deeds will remedy some of the defects that exist under private conveyancing (see § 2.2.3 and 2.2.4). Originally a deed was copied or abstracted into a public register ('transcribed'). This way the contents of the deed and the date of registration are authentically stored, and fraud is much harder to commit. Nowadays usually a copy is presented to the registry, which will be dated and stamped or sealed to have the same effect. Compared to the secrecy of private conveyancing a deeds register is generally a public register, in which everybody can go and inspect the registered deeds. Furthermore registration of deeds generally provides a certain level of security to owners since a registered deed takes priority over an unregistered one. Finally registration is often compulsory to affect third parties, but in some countries even to complete the transfer. Nevertheless registration does not prove that the legal consequence intended by the parties to the deed did actually take place.
Systems of deeds registration exist in many varieties. Some are simple, rudimentary collections of unorganized deeds like the ones in many parts of the United States. Others are well operating, improved deeds registrations (Zevenbergen 1994) like in South-Africa[39], of which Simpson even said that it should be called a title registration. It is once more not easy to describe the essence of all of these systems in a few paragraphs.

weaknesses of deeds registration
Systems of deeds registration are usually described with the main focus on their problems. These problems can be explained by the following defects (Zevenbergen 1994: 4):

[39] A system based on high legal and technical standards that is not affordable for many of the new landowners of the post-apartheid era, for whom more suitable solutions are being implemented (Fourie/Van Gysen 1995); e.g. for being unsuited to mirror the *de facto* land tenure practices and too expensive to meet the demands of the majority of South Africa's population (Barry/Fourie 2002: 30).

- the fact that the deeds merely prove the fact that a transaction took place, without guaranteeing that the intended changes did really occur;
- the fact that it is not compulsory to register (all) changes of ownership, so that a correct impression at one moment may become erroneous later on;
- the fact that the object the deed refers to is not very well described;
- the fact that the chronologically stored deeds are badly accessible, sometimes only through poorly alphabetized name indexes.

In other words; a deed, in itself, does not prove title. It shows that a transaction took place but does not prove that the parties are legally entitled to carry out the transaction (Palmer 1996: 63). What is registered is not the title but only the 'evidence' of title, namely instruments purporting to transfer or deal with various interests. Therefore a would-be purchaser has to decide, by examining these instruments, and by inspection of the property, whether or not the vendor is the owner and has the right to sell. The history, or chain of title, of a claim has to be searched back to its original root (if possible), and all registered instruments relating to that property have to be studied. In many cases, however, this title research is limited to the period given in a statue of limitations (for instance 15 years in Singapore (Burdon 1998: 97)). Theoretically, the title research has to be repeated in full upon each successive transfer[40]. A fact that is (over-)stressed in the literature. (Simpson 1976: 97-98, Hofmeister/Auer 1992: 15-16).
On the other hand an advantage of deeds registration is that the procedure for accepting the deed by the registrar can be very quick. Only a short check might be made to see if the deed meets the formal requirements. In *the Netherlands* this includes checking if the speciality information is clear. Is there clear information on the parties included and is the parcel identified by the cadastral parcel number? The deed also has to be drawn up by a notary in most cases. The quick procedure is especially important in cases where it is the moment of acceptance of the deed that completes the transfer of title.

well functioning deeds systems
"Despite these weaknesses, Dowson and Sheppard (1956, 71) note that the procedure may be made to function efficiently, but not on account of any intrinsic merit" (Larbi 1994: § 8.8.1). "The reliability of title examination procedures can be greatly increased with the aid of appropriate indices, bloc-maps and the imposition of various requirements by law in regard to the proper survey of the lands being dealt with and so on." (Simpson 1976: 97-98). Many countries have improved the operation of their deeds registration through numerous modifications. Some of these include changes in the law, but many others are also achieved through sound administrative procedures. Examples of those are for instance the introduction of a geographical index like the 'abstract index' in Ontario (Canada) or the 'search sheets' in Scotland (Simpson 1976: 84 and 100, Burdon 1998: 67 and 46).

improved deeds registration
There can be various steps taken to improve registration of deeds (for instance Dale/McLaughlin 1988: 23). The following solutions can be used to solve the defects

[40] In practice one can often limit the title research till one reaches the date where the title research of the previous transaction started, if one trusts that title research. That is surely the case when it was done by the same lawyer or firm, or in the US when a 'title plant' (see Hofmeister/Auer 1992: 15) is used. And even with regard to unregistered land in England and Wales solicitors regularly rely on the previous 'abstract of title' (Burdon 1998: 29).

described above. They are presented in order of increasing need for legal change to implement them. The use of computers is added as an additional solution to much of the defects. The solutions are more elaborated in Zevenbergen (1994: 6-10).

- Improved accessibility, to facilitate the searches, by introducing a fully alphabetized name index, and even a property index (like the Scottish 'search sheets').
- Better object speciality, by clear (graphical) descriptions of boundaries, use of parcel or index maps, and use of straightforward identifiers.
- Use of computers. Although systems of land registration have existed well before the introduction of computers, use of them is very beneficial, also because of the increase in complexity of society and the increased density of population in certain areas. When improving deeds registration computers can be very helpful, especially in making it possible to improve and integrate the indexes to the deeds register. A good property index, that will become even better when computerized, is only possible when there is a good (cadastral) map and numbering system to form its basis.
- Improving completeness, by supplying legal advantages to registered deeds, which unregistered deeds lack. Making the registration of the deed a prerequisite for the transfer of title is the most refined form.
- Improving reliability, by assuring that the registered information is as good as possible. Under many deeds registration systems there also is a check before a deed will be entered. The purchaser or his or her legal advisor, will investigate if the seller owns the property and if he or she is entitled to sell it off. In many countries the purchase of property is (mandatory) done with the assistance of a legal expert (like a notary). He or she often undertakes the same kind of checks that the registrar would undertake in a registration of title. And when making these checks, they will be facilitated by the improvements on the other problems in an improved registration of deeds.

  In many countries the tracing back through all the deeds to a good root of title is limited by a statute of limitations or prescription. This often obviates the need to trace back further than say 10 to 20 years (resp. in Scotland and the Netherlands).

some successful systems of deeds registration

Numerous countries have moved along this path and operate effective and efficient land registration systems. The literature also acknowledges the success of several of these systems, which –due to the oversimplified one-dimensional classification– still need to be dubbed ‘registration of deeds’. We will shortly look at Scotland, South-Africa, France and the Netherlands here.

In Scotland the Registration Act 1617 formed the base for the Register of Sasines, an effective and efficient system (Simpson 1976: 98-104, Burdon 1998: 39-48). But only a few years before this was established, it was written in 1609 about the then existing register that it was “serving little or no use than to acquire gain and commodity to the clerks keepers thereof, and to draw his Majesty’s good subjects to needless, extraordinary and most unnecessary trouble, turmoil, fasherie and expense” (Burdon 1998: 39).

A very important element in the Scottish deeds system is formed by the ‘search sheets’ (introduced in 1871, and kept from 1876 onwards), which created a parcel-based index. It does not have any statutory authority and was introduced ‘administratively’. In 1963 the Reid Committee concluded about the system: “It affords security without losing flexibility”

and “It keeps bureaucratic control to a minimum and allows maximum freedom of contract. In short, it is a practical system which works well.” (Simpson 1976: 101). Nevertheless title registration came into operation in 1981[41].

In South Africa since 1828 every deed and mortgage has to be subscribed by the registrar of deeds (before this was done by two members of the court according to Roman-Dutch tradition). The registrar is required to satisfy him- or herself that a deed is in order before he or she accepts it for registration, and to reject it if he or she is not satisfied. When satisfied, the registrar will issue the approved document as the title deed to the rightholder. The only way to acquire ownership of land is through the medium of the deeds registries and the land parcels are closely defined. (Simpson 1976: 104-108) It leads to a system which is, in principle[42], very accurate (Palmer 1996: 65). Simpson (1976: 105) likes the system so much that he thinks it should be classified as a title system (see below). He actually claims that this is the kind of system Torrens aimed at. “But he was handicapped by the system of conveyancing and the English land law and equity which had been brought from England with the first settlement.” The Dutch system being “infinitely preferable to the English system if the strictures of the English lawyers we recounted in Chapter 3 are to be believed.” (Simpson 1976: 107-108)

In France every deed has to be registered to have effect against third parties, and since 1955 a parcel-based index –the land registry index– is kept, which is in close coordination with the cadastre, which falls under the same directorate and with which it shares the offices (Springer 1998: 3). “The land ledger in France (*fichier immobilier*) approaches from a technical point of view the land register from the Middle European *Grundbuch*, although legally speaking it is only a supplementary register (index).” (trans. G5 from Hofmeister/Auer 1992: 18). Simpson (1976: 412-413) says about this French system “In brief, here is a popular system which, whatever its theoretical shortcomings, is highly effective in working practice, and there is no evident need, still less demand, for any drastic change.”

In the Netherlands an even further improved system of land registration operates. The transfer of ownership only takes place after the deed has been registered, and again a parcel-based index (cadastral ledger, *kadastrale legger*) was introduced in the 19th century which has grown in to a *de facto* title register, which fulfills an important role in actual conveyancing, but has no special legal status (see *the Netherlands* and Zevenbergen 1996). Pryer (1993: 61) qualifies this as a cadastre which has been developed to include

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[41] After several commissions (1910, 1948) and committees (Reid 1963, Henry 1969) the Land Registration (Scotland) Act 1979 introduced a form of title registration to Scotland, which is very similar to that in England and Wales. The introduction is done county by county, and within the county an interest is registered on the first transfer for a valuable consideration. By 1998 14 of the 33 (old) counties, containing the majority of the people, had been brought under the new law, with the latest county planned for 2003 (Burdon 1998: 49). The register is comprised of ‘title sheets’, likely to be not only in name closely related to the pre-existing ‘search sheets’.

[42] Since land ownership became available to all South-Africans the technical and legal level of perfection is too expensive for many of the new, poor, small landowners (Fourie/Van Gysen 1995).

land registration[43]. Hofmeister and Auer classify this system (together with the Spanish one) as having "a peculiar intermediate position between the French system on one hand and the Middle European *Grundbuch* system on the other hand." (trans. G6 from Hofmeister/Auer 1992: 19).
In France and the Netherlands the parcel-based registers that –technically– have the same function as a title register are part of the cadastre. In general the development of a complete and efficient cadastre influences the evolution of the land registration system. In addition to countries such as France and the Netherlands where the system of "improved deeds registration" functions so well that no changes are being considered, other countries have used the cadastre as a stepping-stone to convert from deeds registration to title registration (for instance Austria and Germany in the late 19th century). (compare Figure 3.1 and Williamson 1985: 120).

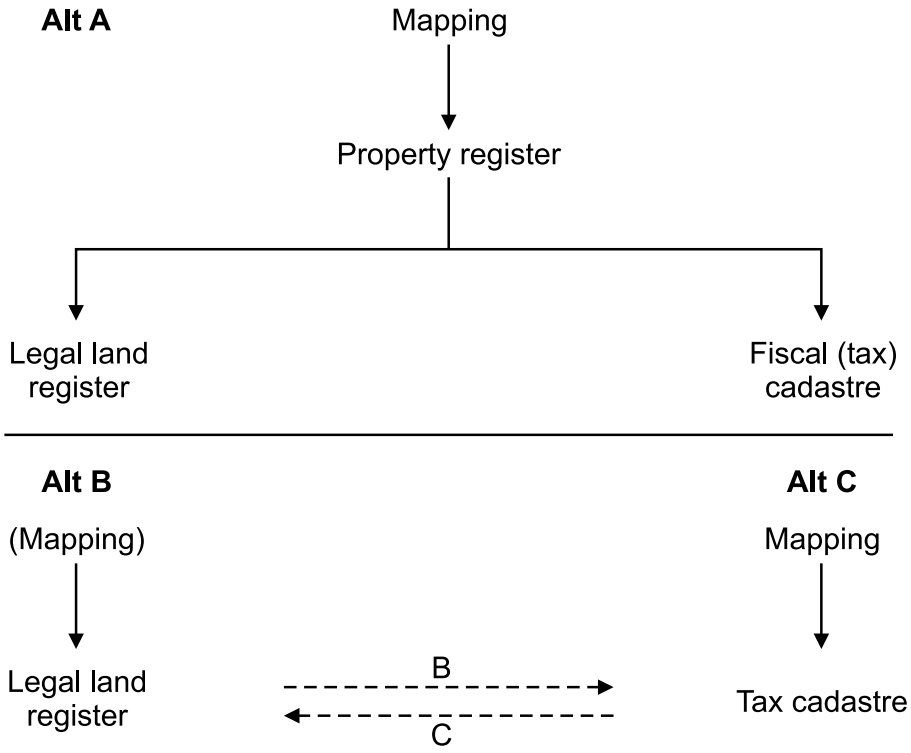

Figure 3.1; Alternative ways of building cadastral/land registration systems (taken from Larsson 1991: 27)

next step or not
Thus it is possible that a deeds registration system is improved so much, that title registration can be introduced on the basis of this (see also § 2.2.4). According to Larsson (1991: 22) this stage is reached when files for each –clearly identified– land unit were created in which all future transaction documents would be stored and some kind of 'title investigation' was introduced in combination with a legal rule that only registered deeds would be protected against third parties. No longer did one need to search the earlier deeds, and in addition the state not only guaranteed the content of the register but also

[43] As a real Anglo-Saxon author he adds that this way "an 'improved' system of deeds registration has been developed, virtually indistinguishable from title registration." (Pryer 1993: 61).

undertook to indemnify for losses on frauds and mistakes in the register, making it a very reliable registration system indeed (Larsson 1991: 22). This is the kind of system usually referred to as title registration.
Some continental European countries were able to introduce this based on good information they could derive from cadastre and deeds registration together.
Other countries, however, decided to introduce title registration to remedy all kinds of problems they had with the existing system. In such a case it is much harder to complete the title register, and no jurisdiction which 'fled' to title registration seems to have managed to convert all titles (see below).
Larsson (1991: 24) also indicates that there are certainly many intermediate stages of taking this step found in various countries, like South Africa. On the other hand Hofmeister and Auer (1992: 17) claim that 'deeds will never become title.'

3.1.4 Debate on "title versus deeds"

"title above deeds"
As can be judged from the last sentence of the previous paragraph, strong convictions exist about the issue of title registration versus deeds registration. To a certain extent these convictions are so strong, that they get some characteristics of religious beliefs. An open debate is of course not stimulated by this. In this regard the author admittedly has developed his own beliefs, which focus mainly on keeping it simple (thus usually not starting with a full fledged title registration). Introducing title registration in a context where no reasonable registration system is already existing, is not the panacea it is often held for (Zevenbergen 1998a: 579-580).

highlights of English history
Within the English-written literature the superiority of title registration is strongly emphasized. Even in previous paragraphs examples of that could be seen.
With regard to England this is not surprising. As described in § 2.2.3 and § 3.1.2 conveyancing in mid 19th century England was a perilous activity. Continued private conveyancing, and in some areas a very rudimentary and secret deeds register, combined with multi-tiered tenurial arrangements were in desperate need to be improved. It is important to realize this when reading the strongly formulated opinions of many Anglo-Saxon authors. There is of course no doubt about the superiority of title registration when it is compared to private conveyancing or a 'secret' deeds registration under a multi-titular land tenure system. This, however, does not mean that this conclusion can be applied without reservation when comparing just any system that is called deeds registration with any system that is called title registration.
To continue on the case of England one should also remember that the mere introduction of title registration (first attempted in 1862) was not a success at all. Only after introducing the principle of general boundaries and avoiding expensive boundary surveys (1875), introducing selective compulsory registration (1897), simplifying the substantive land law (1925) and making conversion mandatory on transfers in designated areas did the system start to get into swing. Even in 1998 25 % of the land was still under the old system, leading to an extension of the cases in which mandatory conversion is prescribed by law.

other strong opinions
Authors from the two other title registration groups (see § 3.1.2) also share the believe of the superiority of their system(s). From the German/Swiss Group this is done clearly by Böhringer who says "Out of all the land register systems practiced throughout the world,

property buyers and property creditors have the greatest level of security from the land register system applied in Germany, Austria and Switzerland." (Böhringer 1997: 169) "When compared internationally, the Central European land registry system with its entry principle makes property law extremely reliable and certain, without the practicability and speedy transfer of rights being materially impaired as a result. The land registry system in Germany, Austria and Switzerland is indisputably one of the best in the world. It can be recommended to any state." (Böhringer 1997: 176) Coming from a very legalistic perspective, he does add "Considerable costs admittedly have to be incurred in order to guarantee this security" (Böhringer 1997: 169-170).

From experts working in the Torrens Group there is not only literature acclaiming the superiority of the Torrens system, but also an active policy of exportation of the system. Throughout the last few decades a lot of work has been invested in South-East Asia (and the Pacific) in the field of land registration, and all of these systems are set up as Torrens systems. Especially the activities in Thailand are well documented (e.g. Angus-Leppan/Williamson 1985, Feder 1987, Jeffress/Onsurd 1989). Similar activities in Indonesia have gone underway in the late 1990s (see *Indonesia*). Here, however, the system is called a modified Torrens system (Soni Harsono 1996: 8), some find that term an overrating of this basically 'negative' system (see § 3.2.1).
But Australian authors have at least dared to ask "Is the Torrens system suitable for the 21st century?" (Birrell et al 1995). Their conclusion is that changes are needed to live up to the five qualities of Sir Robert Torrens 'reliability, simplicity, low cost, speed and suitability'.

"neglect of deeds"
Still, in much literature title registration is highly praised and considered far superior to deeds registration. Consequently deeds registration is often held in low esteem. Many project-proposals and papers therefore, do not take the existence of such a system into serious consideration in improving land administration practices in a developing country. Immediate introduction of title registration is usually prescribed as the overall solution to the problems. The author does not agree with this, as can be seen in the paper 'Is Title Registration really the Panacea for defective land administration in developing countries?' (Zevenbergen 1998a).

senseless debate
Clearly the classification "title versus deeds" only has a very limited value. Trying to put all these differences into a one-dimensional classification leads to oversimplification. Combined with an extreme legalistic point of view, this has led to a lot of misunderstanding. Especially well established (administrative) practices, which have become part of the law at large (through custom) have not gotten the attention they deserve. Furthermore technological developments (esp. in ICT) have provided the instruments to soften some of the former differences (esp. databases can be queried in many ways, not needing separate indexes for parcel, address, owner, transaction, date etcetera). To avoid such debates one has to look at systems of land registration in a more-dimensional way. A first attempt to do so can be reached by following Dekker, who classifies land registration along two lines; the question which documents are registered, and the question which legal proof the contents of the land registration gives (see § 3.2.1).

The idea that the traditional distinction between title registrations and deeds registration has only limited value, has been expressed by McLaughlin, Williamson and Nichols. They say that in reality most systems lie on a spectrum somewhere between the two extremes

(McLaughlin/Williamson 1985: 96). Also they argue that “In practice this distinction is blurred; in some cases an improved deed registry system may provide as many, if not more, advantages than a land titles system that has inadequate arrangements for managing the information in the system.” (McLaughlin/Nichols 1989: 81, similar Dale/McLaughlin 1988: 24)). Referring to the latter, Palmer (1996: 64) argues that “the original differences between the two systems can be attributed to quality of information. Improvements made to information management (such as better examinations by registrars and the creation of parcel-based registers) in deeds registries may render them virtually indistinguishable from title registries. Furthermore, the distinctions between registration of deeds and titles may have relevance only in countries using English common law.” He then suggest that it would be more useful to distinguish between “positive” and “negative” systems (see § 3.2.1). Even better is a multi-dimensional approach, focusing on jurisdiction-wide coverage, quality control, currency, guarantee, and indemnity. (Palmer 1996: 64-66).

In the end the value of registration depends on whether it is authoritative and complete and has validity[44]. "Not only a provision in law gives a strong legal evidence, an efficiently, effectively updated system and well trained officials which are concerned with the 'deed' give in principle the value to the registration system". (Henssen 1988: 37) Unfortunately Simpson turns this more or less upside down as can be seen when he talks about South Africa. He argues that “the only reason for classifying the South African system as deeds rather than title registration would appear to be that, technically, it is not the fact of registration which proves title but the document of transfer, if duly registered. But does this make any real difference in practice if the registrar is required to satisfy himself that a deed is in order before he accepts it for registration, and to reject it if he is not satisfied, particularly if the deed itself when registered has the effect of a certificate of title?” (Simpson 1976: 105) He concludes that it is misleading to classify it as a deeds system, and that it is registration of title to all intents and purposes (Simpson 1976: 105). Classifying it as a deeds system is only misleading, when one has developed a biased opinion towards deeds systems (Zevenbergen 1998a: 575).

real issues

There is a certain number of characteristics that have to be met to make a system of land registration work well. By far the most important seems to be ‘good administrative operation’, which has to be backed by some pieces of (statutory) law to make sure enough instruments reach the registration office.

The question then is ‘do people have trust in the system and rely on it’. If so, they will use it. For cadastral systems its usage has been assumed to be a critical factor in determining if a cadastral system is effective or not (Barry 1999: 82).

Only in cases of a system that has a tendency to foul up regularly, it appears necessary to back up this public trust by a formal guarantee or indefeasibility. Too much concentration on the odd exception to the general rules is another virtue of land registration publications.

[44] Respectively meaning that 1) it must carry the authority of the Government, 2) the registration system must provide a complete record of all data required to be registered, and 3) the act of registration conveys legal validity or proof of the data registered (Henssen 1988: 37).

3.2 Other Classifications

3.2.1 Negative versus Positive Systems

first description
Again there appear to be no universal definitions of either one of these types of registration. The classification in negative and positive systems of land registration has been used extensively in *the Netherlands* during the debate on the new civil code during the 1950s through 1980s, in which the guarantee and indemnity issue was central. Under a positive system the registrar or his or her employer (usually the State) guarantees the titles that are registered. Whatever is in the registration is –by law– regarded correct. Damage caused by mistakes is settled (financially) by the State (or the registry). In a negative system there is no guarantee regarding the actual title. Only mistakes by keeping the registers are redeemed, not the (mainly private law based) problems that might not appear from the deeds, but still exist.
This can be elaborated in the following list of main characteristics of a negative system, which are amended in a positive system:

- lack of guarantees for completeness, correctness and validity of the inscribings for the transferee;
- the inactiveness of the registering institutions in connection therewith;
- lack of a complete registration of interest themselves, with the accompanying guarantees;
- lack of a financial guarantee in the form of liability for the State for the whole registration system (de Haan 1992: 311).

But when looking at it from the position of the owner or purchaser, both systems do have pros and contras. The negative system does not give guarantees, but the processing of instruments that are being offered is very fast and the registering institution does not interfere much with the seller and purchaser. In the positive system the guarantee of the title one will finally receive, is preceded by an often time consuming and in depth investigation in all kinds of aspects of the purchaser, the seller and their agreement. (Zevenbergen 1996: 728)

other descriptions
Although the classification appears not to be used so much elsewhere, one can find some descriptions of ‘negative versus positive’. “One system, the negative, simply records all transactions which involve a parcel and there is, at least in theory, a continuous record of the rights held and any changes that may occur in them. This record of transactions does not, in the legal sense, provide a title to the property and can only act as a witness in the case of disputes. In contrast, the positive system establishes a title to the parcel, and its rights, which is guaranteed by the government.” (Norman 1965 as quoted by Simpson 1976: 21). Palmer describes this similarly as: “In a negative system, the evidence of rights is merely evidenced in the land registry. In a positive system, title is constituted by registration, i.e., registration dispossesses the previous owner and vests the rights in the new owner. Positive systems may be backed by a government guarantee that the registered information is true.” (Palmer 1996: 65)
He introduces this description by saying that the classification “positive versus negative” is more useful than “title versus deeds”. Nevertheless his description of negative and positive systems does not differ a lot from other’s descriptions of deeds and title

registration. He even continues by saying that “Here, the classical view of the deeds registry presented above constitutes a negative system while the title registry represents a positive system”. (Palmer 1996: 65)

a two-dimension classification
For him and others a positive system is virtually the same as a title registration, whereas a negative system is the same as a deeds registration. In doing so, they end up with the same one-dimensional oversimplification as under “title versus deeds”. This was clearly expressed by Dekker (1986b: 24 and 56-60), who classifies land registration along two axes, as is depicted in Figure 3.2. One axis deals with the question which documents are registered, and the other axis with the question which legal proof the contents of the land registration gives.

	negative	positive
registration of deeds	e.g. France	e.g. South-Africa
registration of title	e.g. Germany	e.g. Australia

Figure 3.2; Two-dimensional classification of systems of land registration (derived from Dekker 1986b)

Using this two-dimensional classification avoids some of the problems faced when trying to classify certain countries in the dichotomy “title versus deeds”. For instance the Roman-Dutch Deeds Registry system of Southern Africa. Regardless of its name, Simpson (1976: 105) wanted to classify this system as title registration (see § 3.1.3). Dekker on the other hand, uses South-Africa as the example to illustrate the positive version of deeds registration. Differently Palmer (1996: 65) who gives it as an example of a system which, though negative, acts much as if it is positive.
In a similar way the fact that the Germanic system, usually regarded as a title registration, does not guarantee the title, but only provides it with public faith, can be easily represented in this way. Germany is the example Dekker uses to illustrate the negative version of title registration.

3.2.2 Race versus Notice Statutes

To make sure that documents regarding transfers are actually recorded, there needs to be an incentive to record them. Within deeds registration this incentive is usually the fact that recorded deeds get priority over unrecorded ones. In case of so-called double sales (the present owner sells his or her property twice to two different people) the question of priority is important, especially when one of the purchasers knew it concerned a double sale.

recording statutes
In the United States of America each state has its own recording statute. The question of how priority is arranged is a major point of classification. There are three classes: race, notice and race-notice statutes (Simpson 1976: 96).
Under a ‘race statute’ priority depends on the order in which instruments are registered. Thus the winner of the ‘race’ to the registry gains priority over anybody else, even if he or she knew of a prior unregistered transfer. Such a statute allows for nearly complete reliance on recorded title, but it could be used for fraudulent purposes (Moyer/Fischer 1973: 16-17). In order to avoid such fraudulent purposes, the ‘notice statutes’ were introduced. “*Notice*

statutes place no premium on the race to the registry; the bona fide purchaser for value without notice (actual or constructive) of other competing claims is safe, and the important question here is whether a purchaser in fact had notice of a prior grantee's interest; a 'notice statute' enables the grantee to safeguard himself; for it provides that registration constitutes general notice, but the registration must be effected before the later purchase occurs and not merely before it is registered. Thus a subsequent purchaser can rely on the register *without* having to record his own title document for, as against a prior purchaser who did not record, the subsequent purchaser without notice will always win." (Simpson 1976: 96). In this case it is not possible to rely solely on the recording system due to the fairness as between two conflicting claimants. (Moyer/Fischer 1973: 17-18).
The next logical step is the introduction of the 'race-notice statute'. This hybrid makes a subsequent purchaser prevail against a prior purchaser when the subsequent purchaser is without actual or constructive notice of the earlier claim and registers before the prior purchaser does. (Simpson 1976: 96). Most civil law systems of deeds registration operate a similar model in which a *bona fide* purchaser who registers first gets priority over others. Nevertheless in 1973 only half of the US jurisdictions had progressed from 'notice' to 'race-notice' statutes (only two operated a race statute; Moyer/Fischer 1973: 17).

grace periods
To further complicate the issue some countries have introduced a grace period, before the priority is determined by the order of registration. For instance in Ghanaian deeds system the purchaser has 15 days[45] from the moment the deed is signed to register it, before a conflicting deed that was signed later, but registered earlier gets priority.

'searches'
It is indeed difficult to find the right balance with regard to priority in case of conflicting interests. The best solution seems to be a system in which one can freeze the register for a few weeks by some kind of caveat. If the same person who placed the caveat register a transfer within those weeks, he or she will always have priority. Anyone else can be said to have notice (if not actual by checking the register, than constructive by having been able to do so), and therefore always lose from the pre-marked person. Such a system can be written into the law (like the English 'searches' or the German '*Vormerkung*'), but it could also be arranged through administrative practice. The period of validity of the mark should be kept relatively short, otherwise abuse could be made.

3.2.3 Parcel Identification Systems

part of continuum
For the identification of parts of land many systems are used in systems of land registration. The basic problem is that land is by origin one continuum. The object of a right is always a part of that continuum. This part (parcel) has to be separated from the rest of the continuum in some way. Sometimes this is done solely by use of written descriptions, sometimes by the topography in the field and in other cases surveying plays an important role (see § 3.2.4). With one of these methods the boundaries might become clear, but still it is difficult to indicate in a deed or in the registration which of the parcels is meant to be the object of a right. In some cases 'metes and bounds descriptions' are still used (see

[45] This term of grace applies for deeds signed within the place of registration; if it is signed elsewhere in Ghana the term is 60 days, and abroad 3 months.

box), but usually the parcel is identified by referring to a map or plan. When both are used in regard to the same parcels, often they do not match. Parcels (or their boundaries) which are represented in a geographical way could be depicted on a series of maps covering a whole area, or on separate plans for each parcel.

Example of Property Description

"Newton Country, Georgia, Wyatt's District, containing Sixty Five acres, more or less Beginning at an iron bar running Northwest to a black gum tree - Thence NorthWest to a stake; thence North west to a bunch of black gum trees. Thence West to a stake; thence North to a marked pine near the line of T. L. Ray's land. Then with his line to an Iron bar about half way up the Mountain. Thence with Mrs. Doresy's line to Clarence Woods line; thence with Clarence Woods land to beginning corner. Same being part of the J.J. Harris place, of Walton County. Same being part of the land deeded to me by Georgia Security Company, Athens, Ga."

Hammarstrom 1989: 197

cadastral (index) maps

The series of maps approach is found in countries with a cadastre (in the Napoleonic sense) where they use cadastral maps. On such a cadastral map the whole area concerned is initially mapped with all existing boundaries on it. Every parcel is defined by a unique parcel identifier, which plays an important role in the descriptive part of the cadastre, and often also in the land registry. A complicating factor is that parcels will be split and amalgamated regularly. Such changes in the boundaries of a parcel have to be surveyed, the map has to be updated and the identifier adapted accordingly (either by giving a new number or by adding a sub-number to the old one, which is depicted in the case of the Austrian cadastral map in Figure 3.3). In virtually every country these surveys have to be carried out before the transfer of the new parcel can take place, although some accept surveying after the transfer (see *the Netherlands*).

Figure 3.3 Extract from Austrian cadastral map (with sub-numbers)

graphic and numeric cadastres
Originally the boundaries as depicted on the cadastral map were drawn onto the map in the field (with plane tables), and resulted in a graphical representation of the parcellation which was more or less to scale. Later when the processes of surveying and mapping became separated and got improved, the quality of this graphical representation grew. Many countries still operate a 'graphic cadastre' in which the cadastral map contains a graphic representation of the boundaries. If these need to be reconstructed the situation in the field and the original survey field notes are used to redetermine their position (see *the Netherlands*). There are, however, also countries where they operate a 'numeric cadastre'.[46] In such a case every boundary point has been determined in a stable coordinate system (usually the national geodetic network), and the set of coordinates from the boundary points represents the parcel. The map as such is the geometric representation of this, but in case reconstruction is needed, the coordinates will be made visible in the terrain, determining where the boundary is (see *Austria*).

(title) plans
In case the separate plans approach is used, it depends heavily on the scrutiny of the surveyors if the parcels are defined properly. Not only do they have to perform technically good work, but they also have to watch for the relation of this parcel and that of its neighbors. Especially when those neighboring parcels are not registered (yet), use of an index map would define the properties more unambiguous. Numerous countries where an index map is kept, still demand the use of separate plans for conveyance. This seems to be an expensive exercise, with little benefit, except for the surveying community. This holds even stronger in the few cases where a full reconstruction of the boundaries in the field is usually performed on every transfer of the property (e.g. New South Wales, Australia).
On the other extreme a small group of countries (especially in the British Isles) can be found. They use existing large scale topographic maps as the base for preparing title plans and keeping an index.

3.2.4 Fixed versus General Boundaries

The difference between fixed and general boundaries has sparked about the same amount of debate within (especially the Anglo-Saxon part of) the land registration community as "title versus deeds". Again the use of a dichotomy for a more dimensional reality has led to confusion here. Dale and McLaughlin present at least three concepts of fixed and general boundaries (Dale/McLaughlin 1988: 29). Before studying those, the concept of the boundary as such is discussed.

the boundary
"In a legal sense, a boundary is (...) a vertical surface that defines where one land owner's territory ends and the next begins." (Dale/McLaughlin 1988: 29). It could be argued that this vertical surface runs from the center of the earth into the endlessness of space. Nevertheless the boundary is often seen as the intersections of this vertical surface with the surface of the earth; giving the boundary line.

[46] Williamson (1985: 118), when referring to graphical, numerical and computational cadastres, stresses that these are often found next to each other in the same jurisdiction.

boundary evidence
Principally the (two) parties involved when a boundary is created, determine where the boundary will lie. Most of them will mark the limits of their property in the terrain with fences or hedges (linear features) or with wooden pegs, iron bars, or concrete marks (point features). Such physical objects could also be called boundaries, although they might not follow the same line as the legal limit does. (Dale/McLaughlin 1988: 29) Due to all kinds of reasons parties might lose track of the position of a boundary, and come to a point where they want the boundary to be reconstructed. Although surveyors often think that they are especially equipped to reconstruct boundaries, the original survey field notes are regarded as one of the lowest types of legal evidence of boundaries. Whereas regulations often

Priorities in Location of Boundaries

1. Natural Features
2. Original Markings of Grant Boundaries
3. Monuments
4. Original Undisturbed Markings of Surveys
5. Occupations
6. Measurements

Henssen 1991: 53

decree that 'pegs are paramount to plans' and that occupation takes precedence over measurements recorded in documents, those responsible for implementing such policies may, in practice, reverse the process. (Dale/McLaughlin 1988: 212-213). A more refined list of the way different legal evidences of boundaries can be seen in the box. Even with two of the three types of fixed boundaries (see below) the evidence on the ground takes precedence over what is actually written down. Only in the last mentioned type the evidence on the register will normally override whatever is on the ground, once the boundary has been fixed and registered as such. (Dale/McLaughlin 1988: 29).

fixed and general boundaries
The fact that the 'boundary' that is visible in the terrain may not always follow the same line as the legal boundary causes confusion, which is also reflected in the three different concepts of fixed and general boundaries given by Dale and McLaughlin (1988: 29-30).

A fixed boundary can be:

- an accurately surveyed boundary, which makes it possible for a surveyor to accurately replace any corner monuments that might get lost (also 'specific boundary');
- a boundary corner point that becomes fixed in space when agreement is reached at the time of alienation of the land, and thus cannot change without some document of transfer; the surveyor's measurement may provide useful evidence of the boundary's location but the boundary is fixed whether or not there has been a survey;
- a boundary for which agreement has been reached between adjoining owners and the line of division between them is recorded as fixed in the register; from then on the evidence on the register normally overrides whatever is on the ground.

A general boundary can be:

- the case where the precise line of a boundary between adjoining parcels is left undetermined (it could be one side of a hedge or fence, or the other side, or down the middle); see the General Boundaries Rule in the box;
- a euphemism for an indefinite boundary, like the line of high tide in coastal regions or the edge of a forest
- an approximate line that is deliberately kept vague to prevent argument and the proverbial splitting of hairs; it is as if the line of a boundary as marked on a map is placed out of focus; the open spaces either side of it are clear but the center of the blurred line is indeterminate; provided that there is good monumentation, for instance fences or iron stakes driven into the ground and all that is needed by the registrar is a pointer to ensure that the correct parcel has been referred to.

General Boundaries Rule
(Rule 278 of the Land Registration Rules 1925)

(1) Except in cases in which it is noted in the Property Register that the boundaries have been fixed, the filed plan or General Map shall be deemed to indicate the general boundaries only.

(2) In such cases the exact line of the boundary will be left undetermined – as, for instance, whether it includes a hedge or wall and ditch, or runs along the centre of a wall or fence, or its inner or outer face, or how far it runs within or beyond it; or whether or not the land registered includes the whole or any proportion of any adjoining road or stream.

advantages of general boundaries

"The advantages of general boundaries lie primarily in the less demanding standards of survey, and the manner in which the registrar can ignore small changes in the position of a boundary agreed between two parties, whilst still guaranteeing the title of each. The cadastral records may therefore be compiled more cheaply and maintained within defined limits more accurately. If, for example, a fence between two properties falls down and is re-erected along a slightly different line there would be no need to alter any cadastral map or filed plan. General boundaries are also particularly useful when the ownership of properties is being determined in isolation, as in sporadic adjudication, for the ownership of land can be ascertained without it being necessary to consult the owners of the adjoining properties." (Dale/McLaughlin 1988: 30-31).

For instance the earlier attempts to introduce fixed boundaries in England and Wales (from 1862) have been failures, of which the local practice there has learnt a lot. Only several dozens of fixed boundaries have been registered. Pryer believes that these lessons could also be used to the advantage of other jurisdictions. (Pryer 1993: 67) In his eyes the general boundaries rule is a realistic approach for especially rural areas. "Or what justification can there be for requiring precision down to the last millimetre in regard to huge tracts of rural land?" (Pryer 1993: 99) In principle one can agree with him, but there are of course some disadvantages as well.

disadvantages of general boundaries

An important disadvantage of general boundaries is that it does not supply the parties with the level of confidence to the precise spatial extent of their properties that more specifically

defined boundaries do. (Dale/McLaughlin 1988: 31). Furthermore the terrain and the land use patterns have to be such that they allow for general boundaries. The average English countryside with walls and hedges or the Dutch polders with many ditches are well tuned towards use of such a system. This is different for areas where most boundaries are invisible lines, ill defined on the ground or crop-lines and other non-permanent features, as reported with respect to Cyprus. This led an official from the Cyprus Department of Lands and Surveys to say "that the nature of boundaries in Cyprus does not permit the system of 'General boundaries' to operate" (Roussos 1993: 106).

3.2.5 Systematic versus Sporadic Adjudication

adjudication
When a system of land registration is being introduced for the first time in an area, the system will have to cope with 'first registration'. In cases where the system is replacing an earlier system, some kind of conversion method will have to be designed. In cases where no earlier registered information is available, or where the 'old' information has a very limited or bad quality, a process of 'adjudication' has to be started. During adjudication particulars of all rights and liabilities in a parcel must be ascertained and determined conclusively[47] (Larsson 1991: 101). The process can take place in three cases:

- registration of rights
- land consolidation
- government grants of land.

Often the existing rights that will be registered as a result of adjudication have not been totally defined. Their exact meaning might be vague, especially when it concerns unwritten law. Therefore, even when this is not intended, adjudication might lead to substantive changes in the land tenure situation, and therefore constitute a process of land reform. Especially group related rights are often being transformed into more individual forms of land tenure (like in 1960s Kenya).
Adjudication in the end is a process with a strong legal impact. Often the courts, or a special Land Tribunal, play an important role in finalizing the results of the process. It tends to be slow and expensive. In many cases, when the claim is going to be disputed, one needs legal counsel, and *de facto* the underprivileged find themselves in great danger of losing their rights, even when their claim is legitimate. This can be prevented when a more administrative approach is taken. In such an approach the registrar and/or a so-called adjudication committee plays a major role. Although it is possible in the end to appeal to a court, most cases will be solved before that. This will lead to faster, cheaper and especially more equal results.

methods
When a system is introduced two methods can be used, of which one has two variants:

- systematic;
- sporadic:
  - obligatory;
  - voluntarily.

In case of a systematic adjudication, the proper authorities will declare one or more areas (usually corresponding with the territories of local government) as a registration area. For

[47] In French the process is called *constatation*.

this whole area cadastral (index) maps are being prepared at the same time. Usually the right holders in the area are mandated to indicate their boundaries in the terrain, preferably in agreement with the neighboring right holder. In addition to the mapping of the boundaries, everybody has to state the right he or she claims to the authorities, and has to support his or her claim by evidence. Written evidence is preferred, but if not available sworn statements by the right holder, supported by local (and/or customary) officials, are usually accepted as well (see *Indonesia*; where the latter has been introduced with the 1997 regulation PP24).
In addition to the map, a list is made of every parcel that has been identified indicating who has what right to that parcel. This list is then put up for public inspection (for a few months). Rights on the list that are not contested at the end of the inspection period, become more or less final (see also under *qualified titles*). In case of contestation, both claimants will have to try and prove which one has the best right. A decision can be taken by the adjudication committee, and if necessary ultimately by the courts. This type of systematic registration has been applied in *inter alia* several Carribean islands.

sporadic adjudication
In case of sporadic adjudication, the authorities take less action. They will set up an office and declare a certain area open for registration, after which people can come to apply for first registration. In theory right holders, realizing the advantages of the (new) system, should come quickly in great numbers. In practice they do not often bring their title up for registration. Talking about pre-Torrens titles in the Australian states, Simpson (1976: 72) says: “If this title was good, he derived no immediate benefit from registering it but only the future advantage of reducing the cost of investigation should he come to deal with it again. If the title was bad or doubtful, then the last thing the proprietor wanted was to have that disagreeable fact officially disclosed.”
Therefore most jurisdictions make it obligatory to register in certain cases, which will at least include a transfer due to a sales contract. In such a case the parcel in which the sold right is vested, will have to be brought ‘on the register’. This means that for this individual parcel its boundaries will have to be determined, usually by a local survey. Often this means that *ad hoc* the adjoining neighbors will have to be consulted (unless one uses general boundaries, see § 3.2.4). In addition the title has to be proven as good as possible. In these cases written evidence is even more important. Although some kind of publicity is given to the claim, it is never as well known as when the whole area is under scrutiny, and absentee owners stand a serious change of not being aware of possible infringements on their rights. Depending on the exact wording of the law at hand, they might lose these rights as soon as the claim is settled, or they will still have a certain ‘grace’ period to find out and react (e.g. through primarily issuing qualified titles).

‘floating parcels’
A possible drawback of sporadic registration can be the lack of index maps. Since every parcel is surveyed individually, special arrangements are needed to prevent some of the parcels (partly) overlapping each other (see *Indonesia*). Imagine two plots with a brook with wide banks between the gardens; if both claim the brook at different times, some control is needed to find this out. Otherwise both their titles will include the brook. To avoid such problems, every parcel of which the rights are on the register, should be easily traceable; both in the office and in the field. A comprehensive index map, of good graphical quality, on which the registered parcels are plotted is the best way to prevent problems in the office.

If the surveys are connected to a coordinate system[48], they can be easily plotted onto a topographic map of large enough scale. The boundary points can also be reconstructed in the field based on this information. Of course boundary markers could also be of use, and more graphic methods of plotting the approximate position of the parcel unto existing maps or aerial photographs will already prevent many of the possible problems of overlapping parcels.

client driven
Sporadic registration has the advantage of being more client driven. People who have rights which are acknowledged in their community, and who have no intention of selling or mortgaging these rights, have no direct benefit from (new) land registration. Nevertheless they will be forced to participate under a systematic adjudication scheme. In such cases even dormant differences of interpretation might be awoken, creating new problems in the community instead of solving them. But in communities were there are little problems today –and thus few clients that will voluntary register– this situation may change quickly when so-called 'development' reaches these communities. National authorities, large (international) companies and other 'outsiders' will not always recognize the local tenure system, and 'rights' might suddenly be lost. (see *Ghana* and *Indonesia*) And even the local power structure might break down under the increased land and property values.

qualified titles
When there is no complete certainty regarding a title or its extent, it is recommendably to issue so-called 'qualified' or 'provisional' titles, which can later grow into full titles. Usually a distinction is made between titles that are qualified with regard to boundaries, and with regard to title. Titles are qualified with regard to boundaries when an elaborate and expensive process of demarcation and surveying of the (fixed) boundary is replaced by a simple (general) boundary approach. When necessary the title can be upgraded through a final survey. Titles are qualified with regard to title when collecting enough evidence to establish a title without any legal doubts is not possible or not reasonably possible. This could be the case when there is not enough (written) evidence to fully support a claim or to limit problems caused by the limited publicity under sporadic registration. Usually such a qualified title can grow into a full title over time, when it is not contested within the set period (although the title-holder is usually not inclined to go through another time and money consuming procedure for this). The parcel-based index of an improved deeds registration (like in *the Netherlands*) could be seen as containing *de facto* qualified titles without a specific maturation date (expect for the normal prescription or statute of limitations).

costs of adjudication
Adjudication is an expensive process. Depending on the methods chosen, the surveying work will often contribute highly to the total costs. It is accepted in general that under systematic registration, the right holders will not have to pay all the costs involved, but that subsequent transaction will be charged at (near) cost recovery fees. Many of the right holders will have little cash, and would not be able to stomach any serious fees on first registration (often many of them do not even pay the small fee to get a title certificate at the end of the process). Of course when a transaction takes place, there is usually cash at hand. In such cases more realistic fees can be charged. The same of course goes for

[48] For this purpose this does not need to be a national geodetic network. Any network that covers a clearly separated area will do. See also § 2.2.5 and 3.2.3.

sporadic adjudication, which usually takes place at the time of a transaction.
For the government systematic adjudication is therefore more expensive than sporadic registration, since the right holders bear most of the costs in the latter case. Per parcel, however, sporadic registration is much more expensive, since economies of scale can be reached under systematic registration. Furthermore cadastral (index) maps and registers which are area covering, can be used as an important base for land information systems and other GIS applications. Under sporadic registration it will be a long time before a substantial part of the area is covered, and certain types of land are unlikely to be ever entered (especially land owned by the state, municipalities, religious organizations, railways, trusts etcetera will rarely change hands). To get complete coverage in the end a systematic completion phase would be needed in all cases.

strategies
In reality it is never possible to introduce land registration in a whole country at the same time. Even when sporadic adjudication will be used, there need to be enough registrars, surveyors and other experts spread around the country to make this happen. With systematic adjudication it is clear that only a few areas can be dealt with at the same time. When many transactions are occurring in areas which have not been put under the 'new' system, one runs the risk of having more 'old' transactions than 'new' ones, and increasing the load of conversion work in a later stage. Therefore a mixed strategy is being used more and more. In this strategy systematic adjudication is started in areas of high economic importance or expected development. In such areas that are not covered yet, and in other areas of average economic importance, sporadic registration is made possible (could both be obligatory or voluntarily). For other areas it might be worthwhile to make some simpler improvements to the 'old' system for the time being, and avoid the trap of trying too much at once.

3.2.6 Organization of Registry and Cadastre

The last difference mentioned here concerns the organizations that are involved in the system of land registration. When taking the system of land registration in a broad sense there are always several players active in addition to the parties who have entered in a transaction. In most countries some of these players are governmental organizations, whereas others are private practitioners. Usually more than one governmental organization is involved, although there are also countries with one integrated authority performing all governmental functions.

governmental organizations
Usually a key role in a system of land registration is played by one or more governmental organizations. Often the functions of land registration (in a narrow sense) and cadastre (see § 2.1.2) are performed by different organizations. The organization performing the former function can be part of the judiciary (regional courts; e.g. *Austria*, Sweden), another body within the Ministry of Justice (e.g. England), a body within the Ministry of Lands (e.g. *Ghana*) or a more independent land registry. The latter functions are usually performed by a cadastral authority or a survey department. Different countries have these organizations as part of different ministries, like the Ministry of Finance (e.g. Bavaria (Germany)), the Ministry of Lands (e.g. *Ghana*), the Ministry of Building (e.g. Berlin, Bremen, Hamburg (Germany)), the Ministry of Economy (e.g. *Austria*, Baden-Württemberg, Hessen (Germany)) or the Ministry of Internal Affairs (most other German States).

There is also a number of countries in which these governmental functions are combined in one authority, which again can fall under different ministries (Finance in e.g. France or Lands in e.g. *Indonesia*). In some cases the organization is more independent and only reports through a minister (e.g. Minister of Planning in *the Netherlands*) or directly to the council of ministers or the presidency (e.g. in Slovakia, Hungary and Moldova).
The introduction of computer databases has influenced the issue of one or more organizations. For instance *Austria* has introduced one database for the information kept by the courts and the survey departments without changing their organizational structure. On the other hand it was reported that Sweden, which also has a relatively long history of using computer databases in its system, was considering combining the different functions into one organization.
In several long established market economies far reaching privatization plans have been enacted, which have also affected land registration functions to some extent. Usually these functions remain a monopoly regulated by law, but the organizations are set up and run like commercial firms, sometimes in the form of a joint venture (e.g. *the Netherlands*, New Zealand, New South Wales (Australia), Ontario and New Brunswick (Canada)).

private practitioners
Although not everybody agrees with what has been happening in respect of the privatization of land registries and cadastres, there has been a long established involvement of private practitioners in the system of land registration as a whole in many countries.
Often deeds can only be drafted by specialized lawyers (e.g. *the Netherlands* and *Indonesia*), or at least need their notarization (e.g. *Austria*). These lawyers can be notaries, conveyancers or (specialized) solicitors. Even in countries where it is not obligatory to use such legal experts, most people use their services due to the complexity and high financial stakes of land transactions.
The performance of boundary surveys (or cadastral surveys) is restricted to certain people in every country. Quite often this is not limited to government surveyors, but includes so-called licensed surveyors who operate as private firms. Often the cadastral authority or survey department is involved in the licensing process and approval of every survey performed (e.g. *Austria* and *Ghana*).
Several of the countries which have (semi) privatized their registries or cadastres, are making the licensing and approval systems more liberal, relying more on quality assurance and professional liability and less on bureaucratic procedures.

cooperation
In general the organizational aspects seem to be of great importance in the well functioning of the land registration systems. The author thinks that combining the registry and the cadastre in one organization is a very sensible thing to do. Already in 1972 the *Ad Hoc* Group of Experts on Cadastral Surveys and Mapping stated that ideally the two should be performed by a single agency, in order to have the best possible coordination (UN 1973: 32). Other advantages of this setup are a clearer structure for accountability and responsibility and a more efficient way of updating (Osskó/Niklasz 1999). Unfortunately the idea finds strong opposition in quite some countries due to historically grown (inter-ministerial) power balances, (legally) established agencies, and strong beliefs on division of administration and judiciary (compare UN 1973: 32). Ultimately, it is more important that the functions both stand for are performed in a coordinated way in which all organizations (public and private) cooperate well with each other, than how they are exactly organized. With regard to the constant stream of letters being send between the German courts and

survey departments, Böhringer (1997: 175) says that "The exchange of data can only be discontinued as soon as both establishments have changed over to EDP systems." That can be seen in the Austrian solution. There one, shared database, but separated responsibilities, has produced a workable scenario.

3.2.7 Limited Importance of Classifications

differences immaterial for most cases
Most of the differences discussed before are immaterial for the large majority of the cases/properties. Only when more than one different person claims to have contradictory property rights to the same object, there is a need for rules on how to settle this. In most cases it only has to be made easier (and cheaper) for the purchaser to verify the seller's rights, and –by processing the transfer properly– make sure this can be done again on the next intended transfer. An approach focused on contradictory claims emphasizes the legal intricacies, whereas an approach focused on facilitating transfers emphasizes information management and transaction costs. Those using the latter approach, like economists and public administrators, are likely to disagree with the users of the first approach (mainly the legal profession). But the legal profession is called upon to deal with the cases where problems arise (how few that might be), and there only need to be a limited number of chaotic and unsatisfactory court cases to have the public lose faith in the system.

risk management strategies
On the other hand it will be more efficient for everybody when a more 'risk management' based approach is taken (compare Palmer 1998). Numerous systems of registration have the state give guarantees to title. This might make the state so anxious to avoid taking risks and hence be overcautious, that it results in unnecessary delays and expense. Risk taking, although not gambling, is a part of effective management. Otherwise when every aspect of a title and its supporting survey are to be meticulously checked, the hidden costs may significantly exceed the benefits gained. (Dale/McLaughlin 1988: 211) Some small risk is taken, and in the unlikely event of something going wrong compensation is paid (resembling an insurance policy and the principle underlying US title insurance). For instance the registry in England and Wales has taken such an approach, paying approximately 0.8% of the fees in compensation[49].

functional commonalities
The attention given to the differences between different systems of land registration is most profoundly seen in the classification of systems of land registration in the oversimplified one-dimensional classifications (foremost "title versus deeds"). Instead of focusing on such differences, the next chapter will show that it is better to look at the functions the system of land registration as a whole has to fulfil in order to achieve its goal(s). At this functional level the commonalities are clear and large. For the way in which the functions are fulfilled usually several options exist. Different technical, legal, and organizational options are open to set up tasks to fulfil a function. But this holds for every (sub) function, and there seems to be less correlation between the choices made for different (sub) functions than one would expect judging by the one-dimensional classifications.

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[49] At a presentation at HMLR in London as part of the technical tour during FIG 1998 it was mentioned that in 1996/97 about 200 claims were paid totaling around £ 1 million. By far the most claims were related to errors in the register and eight were due to fraud or forgery. Just over half the compensation paid involved the latter.

administrative and ICT practices

As already shown at the end of § 3.1.4 under ‘senseless debate’, the use of oversimplified one-dimensional classifications can be partly attributed to taking a strong legalistic point of view and neglecting the importance of well established (administrative) practices, which are increasingly facilitated by technological developments (esp. in ICT). The ICT provides the instruments to soften some of the former differences. Well designed databases and query tools, replace the need to manually keep separate indexes for parcel, address, owner, transaction, date etcetera. One can also get access to databases from different places, allowing for separate offices with joint databases. By using distributed databases it becomes possible to present to the (end) user one set of information, which is actually composed of data from different coordinated databases.

Although software for systems of land registration-applications is still mostly tailor made, standard packages, both databases and GIS, are increasingly becoming part of it. And even cadastral applications are affected by the standardization efforts in the field of geographical information (ISO, OpenGIS, CEN, etc.).

3.3 Fathoming Classifications by Abstract Concepts versus Reality

different meanings of land

The different societal meanings of land described in § 1.2.1 have influence on the expectations one has of a system of land registration. Land is also differently 'defined' for the purpose of these different meanings. Preliminary land is defined by use patterns, which if enough individualized can be supported at some point by a legal construct of 'ownership'. Even then a difference can exist between ownership and use (other person, but also use limitations like in zoning regulations which leave ownership per se alone).

The different meanings lead to different expectations of the system of land registration. Facilitating transfers is not really of use in the context of the social-cultural meaning, although assuring legal security (including avoiding loss of territory etc.) is. Similarly people in less favorable agricultural areas in rural parts of Central Europe hang on to the land for subsistence farming (or keep it idle to have it available for subsistence farming when they retire). Here some level of legal protection is wanted (but should not cost much), and facilitating transfers is of relatively little concern.

Nevertheless the usual aim is to have a system of land registration apply to a whole country. That means there is a need to find the common expectations and the most important specific ones. Fulfilling too little of them is a risk ('clients' do not feel helped), too much of them will make the system unnecessary complicated, slowing it down and making it (too) expensive. The realized outcome of this dilemma will differ from country to country. This does not only hold for the existing result of the (historical) developments in that country, but even for the (theoretically) most desirable outcome for this country.

Consciously realizing these differences in expectations and historical growth paths should help in looking through some of the superficial differences and into the functional commonalities. It should also help seeing that one-dimensional classifications have very limited power in describing whole systems of land registration.

abstract concepts

Land as the object of property rights is different from most other types of property. In many cases there is not a 'logical' object. The object has to be defined, has to be legally constructed, and can change relatively easily (compare § 2.2.5 and § 3.2.4). The objects are separated by boundaries which define where one landowner's territory ends and the next begins. Even though there often is a reasonably high congruity between topographic boundary features and legal extent, there is no necessary identity between the topography of a parcel and the legal extent of that parcel. The extent and boundaries of land parcels are a matter of legal definition. (Burdon 1998: 152) Parcels and boundaries are abstract concepts. This makes a very large difference with most other types of geo-information, which depicts 'real life' geographical phenomenon. (compare van der Molen 2001: 15). Title plans and parcel maps are legal documents in a graphical form and not just another data-set for a geographical information system (GIS) (Burdon 1998: 154).

Similarly the rights in land are abstract concepts. Property rights are an important example of institutions; humanly devised constraints that shape human interactions (see § 1.2.3). Rights in land are usually described in a complex system of land tenure. Through the abstract concept, land rights can grow into much more than a distribution mechanism for land use. The rights can be activated as capital, allowing *inter alia* for (cheaper) loans against collateral (see § 1.2.1).

abstract and real
These abstract concepts are very important to society, and instead of seeing them contrary to reality, they can be described as 'institutional reality'. This includes institutional facts which exist only by human agreement and are observer relative, as opposed to brute physical facts which exist in external reality independent of human observers and human intentions. More on these concepts, derived from J. Searle's 1995 book 'The Construction of Social Reality', and their application to cadastres can be found with Bittner, von Wolff and Frank. (Bittner et al 2000).

reality on the ground
In the above given descriptions of land rights and parcels as abstract concepts, one could already see references to reality on the ground. The abstract concepts of land rights and boundaries find their most important day-to-day application in regulating use patterns. And use is a very real, and often very visible phenomenon. Where one person stops to use land, and another person starts to use it, people tend to erect physical features. Those can be purely practical (keeping domestic animals and/or children in, wild animals and strangers out, or blocking the view) or intended to mark 'the boundary'. In both cases these are 'real life' translations of the abstract 'boundary'. Physical features are not infinitesimally thin and semi-permanent at best. Walls, ditches, and hedges are rather thick. Fences fall down and are accidentally or deliberately erected in a (slightly) different position and hedges sometimes grow more in one direction than in the other. Deliberately placed boundary markers are usually rooted rather deep and of durable materials (long iron poles, concrete monuments). But they still can be displaced or removed accidentally or deliberately.
In all cases when a boundary 'alert' is visible in the terrain, it is often taken at face value, even if it is no longer in the original position. This even applies in most instances where the original position has been 'registered' by means of surveying and/or mapping techniques (see before).

master or slave
In implementing systems of land registration the important question arises, whether to see the abstract concept as the 'master' who is served by 'reality on the ground', or to see the 'reality on the ground' as the 'master' who is served by abstract concepts.
This question is easier asked than answered. Usually a system of land registration has some of both. In certain cases the abstract concept takes precedence, in other cases the reality on the ground does. Let it be clear that there is no logical or best choice. The more practically oriented people might consider 'the reality on the ground' as the logical master, but they underestimate the enormous importance of the abstract concepts in an advanced society and economy (compare the references to the work of de Soto and North in § 1.2.1 and 1.2.3). The simple 'reality on the ground' use is available everywhere in the world. People live somewhere and work somewhere, both in the formal and informal economies within a country. What is lacking in the informal economy is the possibility to 'activate' the capital which is frozen in mere informal use rights. Abstract constructs (legal, observed and/or recognized) make it possible to get (cheaper) loans against a collateral, and to spread risk, and make it transferable, through stock exchanges and secondary mortgage markets.

role of registration
The question whether abstract concepts or 'reality on the ground' should take precedence also exists with regard to the 'registration' issue. In general with regard to property rights (on all types of goods) this can be seen in the expression "Possession is nine points of the

law". The person who possesses a good, has the best chance of being considered the holder of a property right ('owner'). Or, 'reality on the ground' plays a very important role in coloring in our abstract concepts.
But once one starts 'improving' the type of transaction evidence (see § 2.2.3 and 2.2.4) one starts to get adrift from this. In case of private conveyancing it is possession of the collection of (earlier transfer) documents that is of great importance. The advantage compared to oral agreements is that persons who were not present at the (last) transfer can verify the situation themselves, without having to trace and contact the witnesses. This 'third party' will play an increasing role in further 'improved' types of transaction evidence. Under 'deeds registration' the seller transfers the property right to the purchaser, and they evidence this in a document that is offered to an independent party for safekeeping. Now an array of 'reality' versus 'abstract' options arise. Firstly the question comes up if the transfer takes place in both senses regardless of its recording, or does the 'abstract' transfer depend on the recording? In the former situation the question then is if a third person is protected in any way when the transfer was not recorded, and he or she relied on that fact[50]. In the latter situation 'reality on the ground' will differ from the abstract concept when the transfer is not recorded, be it forgotten or deliberately skipped. Furthermore seller and/or purchaser might have offered the document for recordation, but the recorder might not have recorded it because some kind of formal (bureaucratic) requirement was not met, the document failed on a substantive check he or she had to make, he or she made a mistake, or he or she did not feel like recording it (because of corruption or nepotism). In all these cases the question is what will happen when the purchaser of this not recorded transaction, wants to sell the property to a new purchaser. Is this new purchaser going with 'reality on the ground' and does he or she dare to buy, or does he or she want to be protected by the abstract concept as well? In the latter case the sale is likely to fail, unless the 'defect' can still be repaired. Obviously this will only work with rights which are tangible enough for the new purchaser to acquire something 'on the ground' that is of value to him or her, regardless of the abstract concept. Most likely the new purchaser will also pay a lower price than when he or she would acquire at both levels.

mechanisms for reconciliation
With so many reasons for the abstract concept to differ from 'reality on the ground', some of which can not be blamed on the purchaser, there is a need for a method to get the two in line once again. One way is through prescription or adverse possession rules, in which the abstract concept can be updated in accordance with 'reality on the ground' after a certain amount of time has elapsed (usually between 5 and 40 years, differing from country to country and between different situations). Most systems of law have realized the necessity of fixing some definite period of time within which owners who have been unlawfully deprived of their interests in land must prosecute their claims. Statutes of limitation have for their object the prevention of the rearing up of claims at great distance of time when evidences are lost. In English law title may be acquired by adverse possession, even where land is registered, which is not easily embedded in the Torrens system. A Torrens system without adverse possession rules can lead to considerable doubt about many titles to land which has either been abandoned by registered proprietors and occupied by adverse possessors, or else transferred informally and "off the register" through a series of unregistered dealings. (Pryer 1993: 69-70)
"In effect [prescription] operates as a self-correcting mechanism, causing a change in the

[50] A kind of third level comes into being. It deals with the position of those who relied on the recorded information when that differs from the 'reality on the ground'.

"de jure" boundary position to make it coincide with the "de facto" boundary position after a certain time period. This could be described as a form of quality assurance. For those countries where no such statue exists, expensive litigation may ensue after a long period of peaceful occupation." (Harris/Price 1993: 135)
Without such mechanisms there is a risk of the legal situation lagging behind forever. And if for political or other reasons someone sits still, it is correct that he or she finally loses his or her right.

mirror image
Title registration is the final step in transaction evidence 'improvement'. As Larsson describes it, registration leads to proof of title here. But what does that mean? In its most extreme form it seems to mean "the abstract concept wins, regardless of the 'reality on the ground'". The reasons for which an intention of the seller and purchaser to transfer a property, might not lead to registration, are the same as listed before for deeds registration. In general the checks the registrar has to make here are quite strong, and more often than not they involve consent or approval from other agencies or (local) authorities. The amount of effort and money the purchaser (and/or seller) will have to invest to make sure the registration will be successful is therefore quite large. On the other hand once the registration has succeeded the purchaser really has gotten something. Even if the 'reality on the ground' differs from the registered situation, the one in whose name a property right is registered is protected a long way. Or as a variant on the theme this paragraph started with "Being the registered proprietor is nine-and-a-half points of the law".
What is discussed here is usually referred to as the 'mirror principle', indicating that the register is supposed to show the correct legal situation, or the "register of title is a mirror which reflects accurately and completely and beyond all argument the current facts that are material to title" (Simpson 1976: 22, also see § 2.3.1). When applied to its fullest extent this would lead to the situation in which the register itself becomes the (legal) reality, which seems to be an inversion of the original intend of the mirror principle. Some title registration systems go so far as to virtually exclude prescription/adverse possession rules, so much trust do they have in their system mirroring reality (e.g. *Austria* with regard to the 'boundary cadastre'). Obviously no country has gone to the absolute extreme, and all operate a system with some shade of grey. But it is clearly an example of the 'reality on the ground' versus abstract concept issue.
Therefore in the context of registration of title –in Scotland– even if the document is shown to be defective in court, because of the principle of indefeasibility, which is central to the concept of registration of title, the land register will only be rectified to the prejudice of the proprietor in possession in extremely limited circumstances, notably where such a proprietor consents or where his or her own fraud or carelessness can be demonstrated. The remedy of the notional 'true' owner in the face of the principle of indefeasibility is against the State in the form of the indemnity. (Burdon 1998: 109) Pryer even goes as far as to say that the "Torrens titles are so relatively sacrosanct that, save, to some degree, for fraud, duress and illegality, even the highest courts in Australia have claimed no more than a half-hearted jurisdiction over them." (Pryer 1993: 64) In some cases too great devotion to the principle of indefeasibility of title can cause problems for redress in case of acts or omissions of others. Rectification has only limited application. There is also the twin remedy of indemnification. (Pryer 1993: 70)

equal partners

It is the abstract concept that provides a large part of the added value of systems of land registration. In quite some cases this makes the administrators of the system concentrate on the 'process' of abstracting or "paperizing" as such, sometimes losing sight of the actual contents that is dealt with (compare the "paperized" of de Soto (2000), and the second mortgage markets (e.g. Palmer 1996: 110)). That leads to the extreme of (legally) upholding the abstract situation when it has gone through the appropriate process (has all the necessary 'signatures and stamps'), even if it is blatantly in contradiction with reality. That extreme attitude gives such systems a bad press with the general public (on the ground). An example seems to be the way the boundaries that are derived from the so-called court yard regulations have been treated in Bulgaria (the planning lines are treated as paramount to the ownership lines in gardens of existing built up areas, and the notaries and registry deal with the planning lines even if the parties have refrained from adapting their boundaries to this). Systems of land registration have to be abstracted enough to have trustworthy "paper" representation of properties to support markets in land, real estate, mortgages and other related (financial) products. On the other hand they have to stay close enough to the reality on the ground to be acceptable and trustworthy for the people on the ground. To find this balance it is of the utmost importance to have clear rules of how to deal with the different types of contradictions that can emerge. Basically a different solution can be constructed for each type of contradiction, as long as that solution fits the society it has to serve. It is especially important that for most cases the outcome is clear beforehand, so people can trust the system, and do not have to go to court for every case. Not everything can be foreseen in laws, and therefore countries with a long-running, established system of land registration will have an advantage, since many cases not dealt with in the law have been solved in rulings of the higher courts (jurisprudence) or in generally accepted doctrine. Providing clarity and simple administrative processes seems to be the paramount objective a well functioning system of land registration should go for.

explanatory power

Understanding this difference between the 'reality on the ground' and abstract concept goes a long way to fathoming and explaining differences between different systems of land registration. It appears that many people have become so used to the way their system of land registration operates in a certain case, that they have not given alternatives much thought, and certainly have not looked for more 'holistic' explanations of (types of) differences.

In the end the differences are mainly caused by how the system deals with differences between the 'abstracted concept' and the 'reality on the ground'. Ultimately it is more important that the system has clear rules for the most apparent cases of such differences, than how these rules read.

3.4 Concluding Remarks

In this chapter we saw the most important classifications used when describing systems of land registration. In addition to the “title versus deeds” debate, six other classifications are introduced. Two of those also deal primarily with the land registry (negative/positive, race/notice). Two others focus on cadastre (parcel Identification, fixed/general boundaries). One dealt with the approaches to take on first registration (systematic/sporadic adjudication), and the last one with the organizational structure of systems of land registration. The limited importance of the classifications is also described.
In the last paragraph (§ 3) an attempt is made to fathom the classifications. The explanation is sought in the different expectations that a system of land registration has to live up to and –most importantly– in the relative position that (components of) systems of land registration give to the (legal) abstract concept in relation to ‘reality on the ground’.
All in all, the classifications often deal only with one part of the system of land registration, and treat even that part oversimplified by squeezing it into a one-dimensional classification. Therefore these classifications only have limited meaning when describing (existing) systems of land registration, and even less value when preparing or implementing a (new) system of land registration in a country.
To overcome this there is a need to study land registration much more as a whole.

4 LAND REGISTRATION AS A SYSTEM

There is a tendency within the field of 'land registration' to approach the object of study with a lot of emphasis on relative details, which has led to one-dimensional classifications. Since it is the intention of this study to break away from this approach, there was a need for a framework which could be used for studying land registration as much as possible as a whole. This framework is found in the 'systems approach'. A characteristic of the systems approach is that a system is studied with emphasis on the relations between its elements and the common goal this wholeness is aimed at. Or as Kast and Rosenzweig (1970: 115) formulate it: “The holistic view is basic to the systems approach. In ... many of the sciences, the subsystems have been studied separately, with the view to later putting the parts together into the whole. The systems approach emphasizes that this is not possible and that the starting point has to be with the total system.”

In this chapter the (general) systems theory, on which the systems approach is based, is shortly introduced. The main characteristics of the systems approach as such are described, with some of the explanation already focusing on their application to ‘land registration’. The latter includes reference to a few publications with system-like views on ‘land registration’. (§ 1)
Then the 'system of land registration' is introduced. It is modeled at three levels of detail. First as an open system processing input into output (§ 2). Secondly in the form of both a static and of a dynamic system. For both a list of functions is given. Thirdly two functions of the system of land registration are further elaborated into a list of tasks. The results of the modeling are also depicted in figures. (§ 3)
The chapter ends with some concluding remarks (§ 4).

4.1 Systems approach

4.1.1 General systems theory

The systems approach is a 'way of thinking' whereby the object of our interest is –as its name indicates– approached as a system. A system can be described as a complex of elements in interaction (von Bertalanffy 1951: 307). Although the systems approach can be viewed separately from the systems theory (Keuning 1973: 42), it finds its roots in the latter.
The (general) systems theory was developed mainly from 1950 onwards, based on Von Bertalanffy noticing similar occurrences in different sciences. By introducing this common theory it would be possible for the scientists of different fields to communicate with one another. He also saw it as a way towards unity of science, encompassing a base science for all other sciences. In addition to that broad goal it can also encourage the development of adequate theoretical models in the fields which lack them, as one of the sub goals of the (formerly called) Society for the Advancement of the General Systems Theory reads; maybe also in the field of land registration.

An important part of the systems theory can be found in several classifications of systems. The widest classification is the one by Boulding; he distinguishes between nine levels of systems:

- static structure (frameworks), like crystal structures or bridges, which can be described verbally or pictorially in any discipline;
- simple dynamic systems (clockworks), like clocks, machines or the solar system, studied in physics, classical natural science;
- cybernetic systems (control mechanism), like thermostats or homeostasis mechanisms in organisms, studied in control theory and cybernetics;
- open systems (structurally self-maintaining), like flames or biological cells, studied in theory of metabolism (and information theory);
- lower organisms (genetic-societal systems), like plants, studied in botany;
- animal systems, like birds and beasts, studied in zoology;
- human systems, like men, studied in biology and psychology;
- social systems (or socio-cultural systems), like families, the Boy Scouts, drinking clubs or nations, studied in history, sociology, anthropology and behavioral science;
- transcendental systems, like The idea of God. (Boulding 1956: 14-16, Keuning 1973: 16-19 and 53-54, Checkland 1999: 105).

From level to level the complexity increases, making it more difficult for an outside observer to predict behavior, since there is increasing dependence on unprogrammed decisions. Lower level systems are found in higher level systems, for instance man exhibits all the properties of the six lower levels. (Checkland 1999: 105) This can be depicted in a diagram (see Figure 4.1).

The nine types of systems can be grouped in several ways. The first three can be seen as mechanical systems, the second three as biological systems, and the last three as social systems.

Another distinction is made between closed systems and open systems that are in interaction with their environment. The use of closed systems can be very useful when dealing with mechanical systems, and thus in the physical sciences. A problem with closed

systems is that they have an inherent tendency to move toward a static equilibrium and entropy (chaotic or random state). Systems that can be defined dealing with biological or social problems are, however, in a dynamic relationship with their environment. A system that is interacting with the environment is called an open system. An open system receives various inputs, transforms these inputs in some way and exports outputs. These systems are also open internally, meaning that the elements affect the system as a whole. (Kast/Rosenzweig 1970: 119) Another characteristic of open (biological and social) systems is that they show equifinality (they can achieve their final results with different initial conditions and in different ways) (Kast/Rosenzweig 1970: 128).

In this study the system of land registration is seen as an open system.

An example of equifinality can be found in most computerized systems of land registration. Even though the underlying legal status and procedures often differ considerably, their present look and functionality is usually very similar.

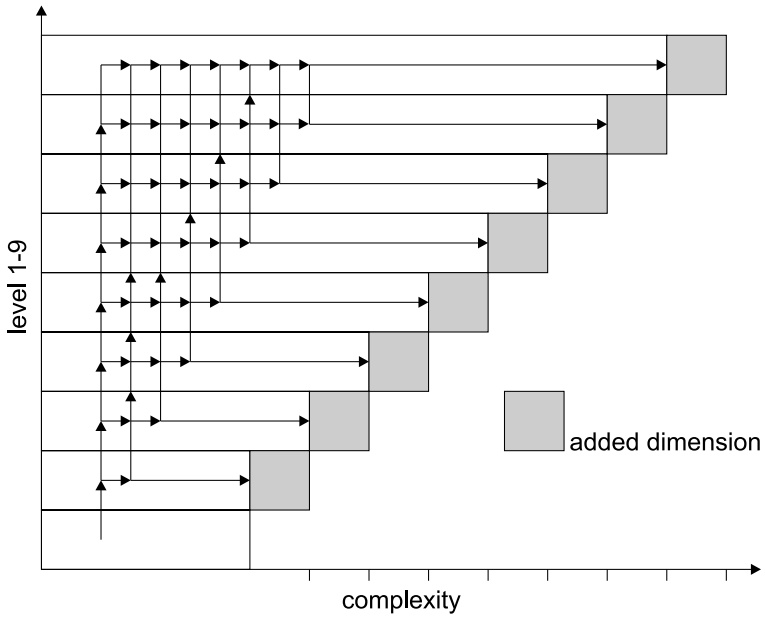

Figure 4.1; Hierarchy of systems (taken from Keuning 1973: 32)

Another distinction can be made between static and dynamic systems. These can also be called one-state and multi-state systems (Ackoff 1971: 663-667, Keuning 1973: 53). In the words of Kast and Rosenzweig structure and processes represent the static and dynamic features of organizations. In some cases the static features are the most important for investigation, in other cases the dynamic features. (Kast/Rosenzweig 1970: 171)

When describing land registration both are useful. The static form of the system of land registration focuses on describing which information is kept; with regard to which objects and with what identifiers. The dynamic form of the system of land registration focuses on describing and understanding the main processes of land registration (to fulfill the three main functions of first registration, transfer of whole parcel and subdivision). See § 4.3.2.

In the lower levels of Boulding's classification the use of mathematics has proven very useful to describe the relations, and some people would demand a mathematical description of a system before a theory would be considered part of the (general) systems theory (like the younger Von Bertalanffy, but not Boulding). So far attempts to do the same

at the higher levels have not been very successful. Therefore some authors are not in favor of Von Bertalanffy's formal science approach, and hold the opinion that unity of sciences (including the non-formal ones) can be reached when operational research will be used as a base for interdisciplinary research, in which the conducts of the system as a whole will be studied through interrelating the different entities (aspect-variables) (Ackoff 1963: 119-121). This 'way of thinking' in systems at the non-mathematical levels has proven very successful. It has been dubbed the 'systems approach' (Keuning 1973: 35). It can be characterized by explanatory appeal rather than by predictive power (Rapoport 1970: 16, Keuning 1973: 45).

The original goal of coming to an all encompassing science covering all disciplines has not been accomplished. Therefore interest for the general systems theory as such has diminished. Slightly less ambitious the 'systems science' forms the base for a common language to be used in interdisciplinary work, for qualitative models when quantitative approaches from operations research fail and for the 'systems approach' as such. The ideas behind systems science are applied more and more in sociology, psychology, economy, organizational theory, philosophy and technology. (in 't Veld 1998: 21-22). Furthermore it is one of the important foundations of theoretical views for the relatively new discipline of information systems (or applied informatics) (Steinmüller 1993: 162-164, Brussaard 1995: 22). The systems approach is also used in many publications[51]. A few examples of interesting books in which the systems approach is used are Vos (1993), van der Walle (1994) and Kerzner (1995). Vos wrote a PhD-study on an earlier partial privatization process at the Dutch Agency for Cadastral and Public Registers, which uses the systems approach as a base for the research. Van der Walle wrote a book on what the author calls 'human information systems' (a combination of automation and psychology), again based on the systems approach. Kerzner wrote an extensive introduction to project management, of which the fifth edition was published in 1995, again based on the systems approach.

4.1.2 Systems Terminology: a System of Land Registration

defining 'system'
There have been many definitions of systems. In addition to the one by Von Bertalanffy quoted in § 4.1.1, describing a system as a complex of elements in interaction, Ackoff says that a system is "a complex of interrelated entities" (Ackoff 1963: 121).
Bos and others identify three items which are common to all the definitions of systems one can find:

(i) the idea of wholeness;
(ii) the idea of (inter-)related components, structured according to a plan;
(iii) the idea of purpose towards which the activities of the system and its parts are working. (Bos 1972: 11)

These elements can be clearly seen in Thierry's definition: "a *system* is a *whole of interacting components*, that has been organized *according to a plan*, in order to reach a certain *goal*." (trans. D1 of Thierry 1965: 164).

[51] A query with a search engine on the World Wide Web for the term 'systems approach' on June 30, 1997 indicated 8000 documents which contain this term; in comparison a query on the term 'land registration' gives 600 and 'land registry' 700 documents.

Keuning is more critical about what is common to all the definitions of systems, and he only finds the idea of wholeness (i) and the idea of (inter-)relation (part of ii) common to most definitions (Keuning 1973: 56-57). He suggests as definition "a system represents a whole as an organized collection of interrelated components." (trans. D2 from Keuning 1973: 67). Both definitions talk about 'components', without making the distinction between elements (called objects or entities by others) and relationships. That is an important distinction, which is used later in this paragraph. The distinction can also be found in what Schoderbek, Schoderbek and Kefalas call "a commonly accepted definition" reading "a *set of objects* together with *relationships* between the objects and between their *attributes* related to each other and to their *environment* so as to form a *whole*" (Schoderbek et al 1990: 13).
For the purpose of studying land registration, however, that last definition is not completely satisfactory. On the one hand the use of the term 'objects' usually points to the mathematical systems science, whereas the use of 'elements' is more neutral and fits better for qualitative usages (in 't Veld 1998: 25). On the other hand it is useful here to include the third item identified by Bos and contained in Thierry's definition with regard to the 'goal'. For the purpose of studying land registration, a system should therefore be seen as:

> "a set of *elements* together with *relationships* between the elements and between their *attributes* related to each other and to their *environment* so as to form a *whole* that aims to reach a certain *goal*."

system components
The terms in the definition that are italic will be shortly discussed here (compare in 't Veld 1998: 24-27).

Elements are the smallest parts the observer wants to look at for the benefit of his or her study. A sociologist studying a company as a system will see people and machines as elements. A mechanical engineer who has to design a new machine for the company will look at the components of that machine as elements.

> *At a certain level of study of systems of land registration an element could be the coordinate system in which the parcels are geometrically described. At a more detailed level of study the coordinate system could be seen as a (sub)system, with elements being the geoid, the map projection, the origin, etc.*

Attributes are the characteristics of the elements. They could be physical, geometrical, aesthetic, social, etc. Taking a woman as an element, she has attributes like a height, a face, a character.

> *The above mentioned element 'coordinate system' can have an attribute 'zero', indicating that no coordinates are used, but could also have attributes like 'local' or 'national'. At the more detailed level 'map projection' could have attributes like 'stereographic', 'Gauß Krüger' or 'UTM'.*

Relationships exist between the elements. These relationships describe a certain coherence between the elements. This is the way in which elements have influence on each other (bi- or unilateral). This influence means that an attribute of an element leads to a change in the value of the attributes of other elements.

> *When in the list of tasks given in § 4.3.4 the element 'checking' (to decide if the intended transfer will legally take place) gets the attribute 'accepted', the 'registering' will take place (and if 'issuing' is present, a certificate will be issued). When the 'checking' gets the attribute 'rejected' no 'registering' or 'issuing' will take place.*

Environment comprises all the elements outside the system that influence attributes or values of attributes of the system elements or retrospectively are influenced by the system. The fact that there are relationships between the system and its environment is essential for an open system. All the relationships that go from within the system to elements in the environment, and thus cross the boundary of the system, constitute the external structure. When studying an open system it is often a matter of choice which elements are considered part of the system and which of the environment. This choice of boundary is usually determined by the perspective taken in the study (in 't Veld 1998: 43).

> *In this study the environment of the system of land registration includes for instance the system of land tenure, the development of the economy (esp. land and property market and the financial services available) and the penetration of ICT in the society (both telecommunications infrastructure and the ICT-knowledge base). The part of law determining the registration process is taken as part of the system, whereas the part of law regulating land tenure is in the environment.*

Whole (and emergent properties) is of course the most fundamental word in the definition. The 'system as a whole' is more than its parts together. Groups of elements have attributes that are only meaningful when they are attributed to the whole, not to its parts. And although they are derived from its component activities and their structure, they cannot be reduced to them. These attributes are the so-called *emergent properties*. This principle of *emergence* can be seen for instance with the smell of ammonia, the picture emerging from a completed jigsaw, the self-awareness of a brain or the vehicular potential of a bicycle. (Hitchins 1992: 10)

> *For systems of land registration the 'trustworthiness' of the system can be dubbed as an emergent property (see § 4.2.2).*

Goal is what the system is trying to achieve; the objective of the whole. The activities of the system and its parts are not accidental, they have a purpose. Including this in the definition excludes those groups of interrelated parts of which the goal it aims at can not be identified. Nevertheless man-made system, and most natural systems as well, clearly have one or more goals. It is often very difficult and complicated for organizations to define their goals, but it is very important to accurately identify them when developing or analyzing a system for an organization. The goal must not be represented by vague statements, but by real goals, a desired concrete outcome, not just a stated objective. Quite often an objective is stated, but the measure of its performance is not a real measure of that objective. For instance, consider a university system in which quality of education is stressed. Instead of measuring this quality in terms of education, it is measured in terms of number of students graduated. But even when a real objective is defined it may then be considered in a "legitimate" view by moving from the real objective to its wider consideration. For instance reducing infant mortality through vaccinations in an area where the then increased population faces starvation. (Luchsinger/Dock 1982: 14)

> *The goal of the system of land registration in this study is legal security. In the terms of the HABITAT 'Global Campaign on Secure Tenure', this aims to ensure legal security of tenure, protection from discrimination and equal access to affordable, adequate housing for all persons and their families (see § 1.2.1). An example of measuring something else than the real objective in this case would be the measuring of the number of titles issued each year. That would not reveal that the titling process*

for instance is benefitting the rich more than the poor[52], which would defy the wider consideration of the poor having access to land and security of tenure (compare van der Molen 2001: 5).

There are two other terms closely related to 'goal', that need attention here, being *function* and *task*. A clear distinction between them, as well as an understanding of their relations, is important for thinking in systems. In normal speech they are often considered interchangeable. Here we make the following distinction that is also depicted in Figure 4.2:

The function of an element is what this element causes to happen as a desired contribution to the greater whole, in order to achieve the goal(s) of this whole.
The task(s) is (or are) what needs to be done to deliver the above mentioned contribution, in order to fulfil the function (and achieve the goal(s)).

Task	**Function**
• what the element does	• for what that is done
• the activity itself	• and the ((un-)intentional) result from it
• certain tasks, activities	• the function thereof.

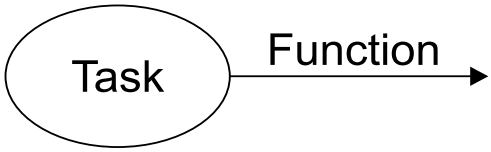

Figure 4.2; Function and task (taken from in 't Veld 1998: 38)

The function deals with the result outwards and not with how the system makes this happen. Systems are often designed by first determining the functions needed to achieve the system's goal. A function changes less quickly in time than does a task. Due to technical developments there is a constant push in performance of tasks from human beings to machines. When the focus is on the function, and not so much on the task, the model can last longer, and it is also easier to come up with more alternatives to fulfil that function. (in 't Veld 1998: 37-40)

Studying a system of land registration (within the context of its goal(s)) at the functional level is likely to help us overcome the tendency to focus on the differences, which are much more on the task level. Furthermore the distinction between functions and tasks is very useful in describing the effects of technological developments. Often one 'mechanizes' the tasks a certain organization (or even department within it) is performing, not looking at the wider consideration of the functions that need to be fulfilled by the whole system. This might lead to less effective, sub-optimal solutions from the point of view of trying to achieve the goal(s) of the system.

sub- and aspect systems
As is shown in Figure 4.3, a subsystem consists of a subgroup of the elements of the system, but all relations in that part of the system are taken into consideration. In an aspect system, however, only a part of all the relations that can be found between the elements are considered, and the rest of the relations are neglected. Within a company system, for

[52] For instance due to expensive legal costs in the juridical appeals procedure during adjudication.

instance, the following could be identified:
- the technological aspect system
- the economic aspect system
- the social aspect system (in ‘t Veld 1974: 138-4).

It remains the primary task of the aspect sciences to study the whole from the perspective of certain aspects. In case the positional value of one of the elements can not be explained by any of the aspect sciences, interdisciplinarity is necessary to fully understand the given organization. Interdisciplinarity applies then to several aspects sciences, which study the same whole, but from a different perspective. (Keuning 1973: 68)

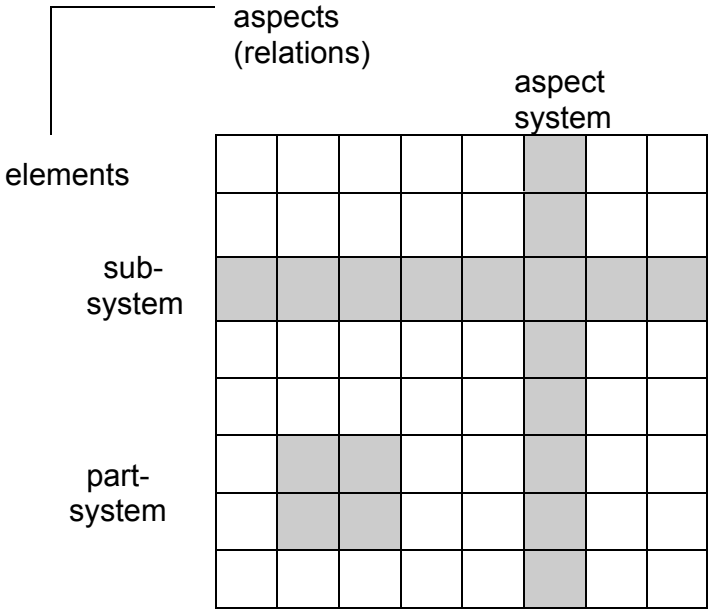

***Figure 4.3; Sub- and aspect systems (derived from in ‘t Veld 1998: 31*)**

An often made distinction in subsystems of a system of land registration is one subsystem land registry and one subsystem cadastre, which concurs with the institutional arrangements in for instance Austria. Nevertheless it is not a very good example. In Austria both subsystems share the same database, and in general the descriptive part of the cadastre and the land register overlap each other for at least 70%. Furthermore in most cases legal aspects will get most of the attention when talking about land registry, whereas technical aspects (incl. surveying) get most of the attention when talking about cadastre, making it almost correct to view land registry and cadastre as two separate aspects systems of the system of land registration instead. Thus land registry and cadastre can best be considered as two –partially overlapping– part systems.

Taking after Burdon (1998: 150) legal input, survey input and an overview could be regarded as subsystems of land registration. But in the context of this study they can better be compared to the different functions that need to be fulfilled in a system of land registration. The first two are part of the dynamic system of land registration, whereas the last belongs to the static system (see § 4.3).
This study looks at three aspect systems of the system of land registration, being the

technical, legal, and organizational aspect systems (see § 1.1.3), even though the interrelations between them are of great value as well. It is clear that more aspects systems exist and are relevant, for instance the social, cultural and economic aspect systems.

4.1.3 Systems View

the whole before the parts
An important and for me essential characteristic of the systems approach is that in examining an element, the focus is not only emphasizing the attributes of the element as such, but also the relation of this element to other elements in a larger whole. The relation, the cohesion between the constituent parts, regardless of its nature, is put in a central position. In case of an open system, the relations between the elements within the system should be stronger or of another nature than the external relations of the element with the environment. Thus a system represents a certain wholeness that can be examined or engineered relatively independent. Since it is the relation between elements in a larger totality that is put central, a very specific arrangement of elements is needed. An accidental combination of some elements does not constitute a whole, and since a system points to the organization of a whole, there is no system in such a case. (Keuning 1973: 59-61)
Angyal says that attributes of the elements are important as far as they enable the element to fill the positions which are required for the system (Angyal 1941/1969: 27). Keuning interprets this in such a way that the ideal situation can only occur when all significant positions within the system are occupied and when all the elements have reached the optimal positional value for the relevant attributes. In organization terminology (see below) this will give the optimal decree of organization. (Keuning 1973: 64)
An even more paramount position to the whole is given by Angyal when he says "*In a system the members are, from the holistic viewpoint, not significantly connected with each other except with reference to the whole.* The constituent parts of a system are not considered separately but with respect to a superordinate, more inclusive factor, the system in and by which they are connected.". (Angyal 1941/1969: 22).
Or as van der Walle (1994: 13) puts it "the WHOLE is more than the sum of the parts and thus essential information is lost if only the parts are examined."
In a similar manner Ramo (1971: 11) tells us that "In the systems approach, concentration is on the analysis and design of the whole, as distinct from the analysis and design of the components or the parts. It is an approach that insists upon looking at a problem in its entirety, taking into account all the facets, all the intertwined parameters. It is a process for understanding how they interact with one another and how these factors can be brought into proper relationship for the optimum solution of the problem. The systems approach relates the technology to the need, the social to the technological aspects; indeed, it starts by insisting on a clear understanding of exactly what the problem is and of the goals that should dominate the solution and lead to the criteria for evaluating alternative avenues."

system as abstraction of reality
A system represents a certain abstraction that has to be used when nature is examined from the viewpoint of a specific scientific discipline. When investigating nature, the examination is confined to some part that interests us at a given time. This segment of nature can be called the object of interest, the entire remaining part of nature being called environment. (Klir 1969: 36). Obviously systems like this do not exist in reality. One can, however, examine parts of reality as systems, even though they are not identical to the objects of interest (Keuning 1973: 54-55). This concurs with Lievegoed, who describes a

system as a man-determined whole of interrelated elements, terms or variables. He claims that in this way one can view a watch, a plant, a school or a company as a system. (Lievegoed 1970: 29) In addition, Keuning emphasizes the fact that in such a case the company is not a system, but can be viewed as a system (Keuning 1973: 55). The emphasis shall be on the 'way of thinking' of the researcher. Thus, a system is "a simplification of reality" (Lievegoed 1970: 30). Brussaard also points to this perspective character of every system's view. Or as he calls it in 'Delft' terminology: "something *is* not a system, but can be considered a system in the light of the solution to a certain problem." (trans. D3 from Brussaard 1998: 111). It concerns the limits of the system and its environment, the choice of the subsystems and aspect systems that are considered relevant and the determination of the time interval to take into account.
The above line of reasoning concurs with the term 'systems approach'. The goal is to give an approximation of reality by simplifying reality in an orderly fashion in order to fathom reality better. (Keuning 1973: 55)

4.1.4 Organizations as Systems

place of systems theory in organization theory
For several decades the systems approach, and especially the open systems theory, had a hegemony in the field of organization theory. This was certainly the case in the 1960s and 1970s. Later on the hegemony was threatened by a series of alternatives. Criticism was aimed at functionalism –another major theory– and the systems theory together, without differentiating between the two (Hassard 1993: 50-53). Organizational sociologists found methodological shortcomings in the generic systems approach. Despite claims to the contrary, they see the typical systems case study focusing on the internal relationships involved in the problem under investigation. It is assumed meaningful to study those relationships in isolation with a boundary that isolates and insulates those relationships from any causal link with others. This leads to an empiricism in which problems are studied and explained in a fragmented way, in which the outcomes are dependent on the way the investigator has divided the problem into problem areas. In this way it precludes any comparative analysis. (Allen 1975: 73-81). In addition, the generic social systems approach is seen as being based on a conservative ideology and on static concepts (Hassard 1993: 55-56).
Although the systems theory no longer has the hegemony, none of the alternatives emerged as the obvious successor to it. There are authors who radically defend the principles of systems theory and others who advocate a range of alternatives to it. (Hassard 1993: 74) Since numerous texts on organization theory are still based on the systems theory, some items of 'organizations as systems' are briefly mentioned here, especially those that have a relation to systems of land registration.

administered organizations as systems
Since there is an orientation towards output functions, environment sensitivity, integration, and perspective and coordination in activities within public administration, the systems approach is uniquely apropos to the study and practice of public administration. This can be seen in a classic writing on administration that proclaimed:
" 1. Administered organizations exhibit sustained collective action.
2. Administered organizations are integral parts of a larger system.
3. Administered organizations have specialized delimited goals.
4. Administered organizations are dependent upon interchange with the larger system." (Luchsinger/Dock 1982: 118)

organization as an open system with subsystems[53]

The distinction between closed systems and open systems that are in interaction with their environments, is important in organizational theory. It was realized relatively late that an organization should be seen as an open socio-technical system. Unlike closed systems, organizations can turn the entropy around, this negative entropy can lead to a more complete organization. Furthermore the equifinality of open systems has a great impact on the management of organizations. Of course, any open system has boundaries which separate the system that represents the organization from the environment. Whereas boundaries in physical, mechanical and biological systems can be identified, in social organizations the boundaries are not easily definable and have to be determined primarily by the functions and activities (tasks) of the organization. The boundaries also depend on the problem under scrutiny.

Another way of looking at organizations is viewing them as structured socio-technical systems. The technical subsystem (technology based on the tasks to be performed) and the social subsystem (relationship between the participants) are in interaction with each other and are interdependent. Under this view an organization is not simply a technical or social system; it is the structuring and integrating of human activities around various technologies. The organizational structure can be identified as the third subsystem, which intermeshes the technical and the social subsystems. Therefore organizations can be viewed as a structured, socio-technical system in which each of the primary subsystems and their interactions are considered. Structure is the established pattern of relationships among the components or parts of the organization. Within organizations there is a difference between the formal and the informal structures. Studies have revealed that these formal and informal structures are intertwined and often indistinguishable (Mintzberg 1979: 11).

The structure of the social organizations can not be separated from the processes of the system. Structure and processes are the static and dynamic features of the organization. In some cases the static aspects are the most important for investigation, in other cases the dynamic aspects.

The structure of most organizations, and many other complex systems, is so complicated that a hierarchy of systems (subsystems and supersystems) can be found in them. Within this hierarchy it is useful to define a whole on a next level, when this new whole shows emergent properties, which do not add up from the properties of the subsystems at the lower level. (Hitchins 1992: 11)

role of technology in organizations

Science and technology are a pervasive force in modern society. Large, complex organizations have become the primary means for utilizing technology. The changing technology has impact upon organizational structure, psycho-social systems and management practice. For changing, innovative technology, the flexible, organic system is most effective, more than the mechanistic form. Hereby it is assumed that technology does not only consist of the physical manifestations, but also of the accumulated knowledge concerning the means to accomplish tasks. Organizational technology is the complex of techniques utilized in the transformation of the inputs of the system into outputs. (Kast/Rosenzweig 1970: 167-168)

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[53] This paragraph is mainly derived form Kast and Rosenzweig 1970: 119-128 and 170-172. What they call a ‘subsystem’ here is actually an ‘aspect system’ in the terminology of § 4.1.2 and Figure 4.3.

These general observations are still true, especially since the development of technology has gone even faster than expected in 1970.
Related to systems of land registration it has been said that the ways that cadastral systems have evolved have often been dependent more on technology and what is technically possible than on the dictates of land, law and people (Dale 1979: 29).

Nevertheless, technological developments are often only used to mechanize or 'manumate' (Burdon 1998: 105) a formerly human task. It would be better to re-think how to fulfil the function with all the available technology, which might lead to a different set of tasks. The risk of only mechanizing tasks increases when computerization projects are considered separately for different subsystems of a system. For instance in *the Netherlands* the descriptive and graphical part of the cadastre were mechanized separately, so that the necessary information exchange between them took place manually for several years after both had been computerized. The risk of mechanizing tasks increases further when these tasks are distributed among different institutions. If in such a case one would really automate the functions, this is likely to lead to a new set of tasks. It is unlikely that this new set of tasks can be distributed among the different institutions without a shift in responsibilities, authoritativeness, money generation and power between these institutions. An example would be the design of separate databases for the descriptive part of the cadastre and the land registry, even though they overlap for at least 70% of the contents. Obviously this leads to a duplication of effort both in designing and maintaining the databases, as well as in data entry and updating, even when the information exchange between the two databases itself would be automated. The databases will never be exactly the same for the overlapping parts, causing inconsistencies with all their consequences. This situation can be found in parts of Germany, whereas in *Austria* the different institutions set up one common database.
Of course trying to tackle too much at once in an automation project is a sure risk, but keeping too small the system within which improvements are going to be made is likely to lead to a sub-optimal solution.

organization's goal
In this study's and many other definitions of a system, the goal which the system aims to achieve plays an important role. It is this goal that determines which functions the system fulfils, and which tasks (activities) are performed within the system to fulfil those functions. This applies especially with regard to organizations. "Any organization has a goal set, a group of desired outcomes or outputs. These are arranged in a hierarchy of goals, based on importance." (Luchsinger/Dock 1982: 23). It is generally accepted in organization theory that one has to formulate a goal first, before one can rationalize the human behavior within an organization (Keuning 1973: 118). Only if the question why and for which goal people cooperate in structured collectives is put first, thinking about organizational questions can escape the danger of the organization becoming an untouchable wholeness whose goal is derived from only a few individuals or from an unclear environment (Keuning 1973: 113).

But when the goal of an organization as such is formulated, there may still be complications. The creation of subsystems to undertake parts of the work, means one has to develop goals for the subsystems. "This can create suboptimization where the parts of subsystems pursue their own subgoals. Since the parts affect the whole, it is desirable for subsystem goals to be consistent with overall system goals, but differentiation naturally creates potential goal conflict." (Luchsinger/Dock 1982: 23)

It seems that this happens a lot within systems of land registration, even when the subsystems are part of one organization (BPN in Indonesia*) or at least adhere to one ministry (Ministry of Lands in* Ghana *or Finance in France). The actual tasks being performed are no longer seen in the light of the overall goal to be achieved.*

"The goal structure sets the framework for the relationships between an organization and its environment. However, the goal-establishing process is dynamic and complex. Organizations typically do not have one single, unitary objective but must satisfy a whole set of requirements imposed on them by the environment and internal organizational participants." (Kast/Rosenzweig 1970: 529)
"The central objective of a system is its measure of performance. Hopefully, this will be the output of the system. Objectives may be classified as real or stated. The real objective of the system will not be sacrificed to achieve other goals. ... The stated objective may be the real objective, but it is not uncommon for an organization to print one objective and to operate by a different objective. An analysis of the company's system will reveal the real objective." (Luchsinger/Dock 1982: 3)

Most systems of land registration will have as a goal or objective the protection of interests in land, most likely it is added that this has to be done in a fair and equal way. Furthermore a goal can be formulated to supply land related data, either for administrative and policy duties, or even for any societal need (including commercial ones).

4.1.5 Systems Views on Land Registration

need for systems view
The most common division in part systems of systems of land registration distinguishes between the land registry and the cadastre. In quite some countries this coincides with institutional arrangements, in which both part systems are performed by different agencies, which regularly even adhere to different ministries (land registries often to the Ministry of Justice or –as a part of the judiciary– to no ministry at all; cadastres can be found under numerous ministries, including Finance, Planning and the Interior). Furthermore, at least historically, the higher ranks of staff in land registries are lawyers, and in cadastres land surveyors[54]. Nevertheless the descriptive part of the cadastre and the land register overlap each other usually for at least 70%, which makes the distinction less apparent. The need for the two to work closely together was well formulated by a Minister of Justice of one of the German states[55]:
"The survey people and the land book people have to be interested in each others work. One has to know which are the worries and concerns, the goals and attempts of the others. Both have to acknowledge that they are together made the trustees of administration and order of land, and that therein roots their professional responsibility, their professional satisfaction and their professional honor." (trans. G7 of Kurandt 1957: 6)
The systems approach seems to be very appropriate to do this, since it "frees the viewer from artificial boundaries in his or her search for effects on the total system and its objectives." (Luchsinger/Dock 1982: 15)

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[54] In its most extreme form lawyers will focus on legal aspects, and surveyors on technical aspects, making it also correct to view land registry and cadastre as two separate aspects systems of the system of land registration.

[55] Haußmann, Minister of Justice of Baden-Württemberg, at the yearly convention of the union of licensed surveyors in Heidelberg on October 22, 1955.

Others that have called for more 'systems thinking' related to systems of land registration are De Haan, Williamson and Nichols.
De Haan points to a lack of 'systems thinking' with regard to a study on the future by the Dutch Agency for Cadastre and Public Registers in the late 1970s in which the Agency treated the notariat, with which the cadastre forms one giant information system on the legal status of real estate, as just one of the 'clients'. (de Haan 1979: 170).
Williamson points to the lack of development of a cohesive body of knowledge in the area of cadastre and related land administration issues. "The key to understanding cadastral systems is in taking a global view of a system. This means in the Australian context looking at conveyancing, land registration, cadastral surveying and cadastral mapping as one system which is intimately linked. It means looking at the social, economic and institutional environment in which the system operates." (Williamson 1991: 181) Clearly a 'systems approach'.
As said in chapter 1, Nichols points to the fact that the problems related to land registration "are often approached from narrow perspectives and the theory that could support more fundamental reform has remained fragmented and incomplete." (Nichols 1993: 95)

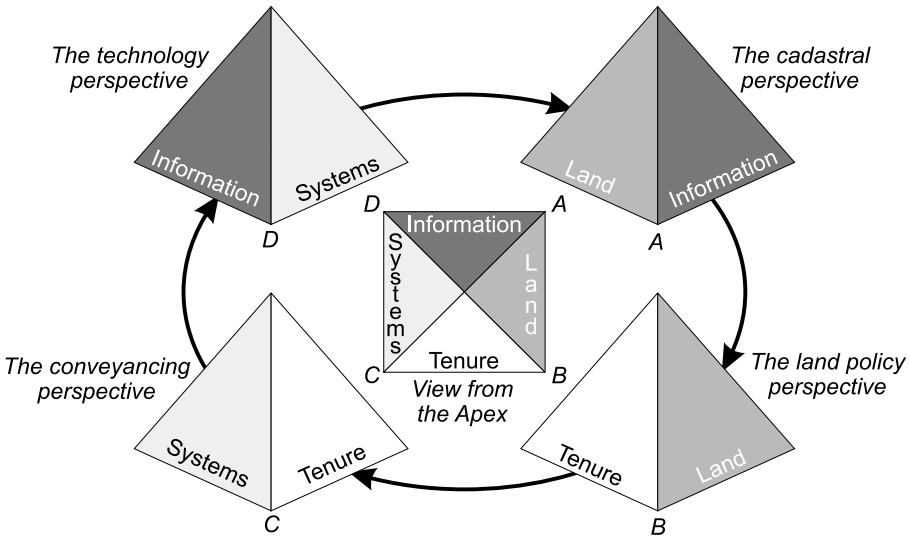

Figure 4.4; Four partial perspectives of land registration (taken from Nichols 1993: 97)

earlier systems views
The problem Nichols identified about land registration often being viewed from relatively narrow perspectives derived from disciplinary background, experience, or immediate needs, was eloquently displayed by her in her PhD study. She depicts the whole as a four-sided pyramid, in which four partial perspectives are distinguished (see Figure 4.4). Usually experts look at land registration from one partial perspectives (either the cadastral, the land policy, the conveyancing or the technology perspective), and see only two sides of the pyramid. To fully understand land registration one would need an apex view, in which one looks at all four sides at the same time. (Nichols 1993: 96-108). In the very informative study she looks at land registration with an emphasis on the point of view of information management.

Also Barry used (Checkland's) soft systems theory as the conceptual framework for his PhD study (Barry 1999, see also Barry/Fourie 2002). He has found the systems theory, and systems thinking in particular, the most suitable methodology for conceptualizing –what he

calls– the interaction between a cadastral system and systems of land tenure, land administration and land policy development as sub-systems of land management (Barry 1999: 43). This is not far off from the way of thinking in this study, although it has a rather different focus with the main topic being evaluating cadastral systems in periods of uncertainty.

Worth mentioning is furthermore Dale's article 'A systems view of the cadastre' (Dale 1979). His view on the 'cadastre' only partly overlaps with this study's perspective on the 'system of land registration'. In short Dale identifies four subsystems of cadastre, being adjudication, demarcation, survey and description. Based on describing several examples, he shows that there is no temporal relation between those four. (Dale 1979: 30) This way of approaching cadastral surveying and mapping helped me understand the different meanings of 'general boundaries' and 'fixed/specific boundaries' (compare § 3.2.4).

4.2 Land Registration Approached as a System

With regard to the meaning of the word 'system', it was concluded in § 4.1.2 that, for the purpose of studying land registration, a system should be seen as:

> "a set of *elements* together with *relationships* between the elements and between their *attributes* related to each other and to their *environment* so as to form a *whole* that aims to reach a certain *goal*."

The meaning of the system components mentioned therein was explained in the same paragraph. Here these components are filled in with respect to land registration, starting at the end.

4.2.1 Goal

Land related activities, like land registration, have great relevance for both private persons, and for the public sector (also representing society at large). This study, however, takes the point of view of the private possessor of an interest in land and of the private person interested in acquiring such an interest. Therefore the goal of the 'system of land registration' is 'to provide legal security to the owner and purchaser of land'. The words in this goal-description should be interpreted widely; 'legal security' meaning not only that one can ultimately get one's right acknowledged by a court, but primarily that society at large accepts the system of land registration, that the system is "trustworthy"; 'owner/purchaser' meaning not only those who have an ownership right in land, or are about to purchase it, but also those who hold certain other interests in the land, or who are granted such an interest; 'land' meaning not only (dry) parts of the earth, but also goods that are more or less immovable, such as trees, buildings and other improvements (regularly called real estate or real property) and areas covered with water. With regard to the other interests and other immovable goods the extent to which they are included in the system of land registration follows from local practice and applicable (tenure) legislation.

This goal of 'providing legal security to the owner and purchaser of land' is closely related to the wording of the mission statement of the Agency for Cadastre and Public Registers in *the Netherlands*: "To provide legal security to the parties in the real estate market at the lowest possible costs"[56]. As explained in § 1.2 this will protect people's rights in land (so they will invest in or on it), it will make mortgages feasible (so they get access to credit) and it will facilitate the land market (so they can transfer it).

The goal of 'providing legal security to the owner and purchaser of land' is primarily achieved through reduction of uncertainty by supplying relevant information to the user (compare Dale/McLaughlin 1988: 171). And uncertainty is absorbed when the one responsible for a model of the reality (which a system of land registration is) guarantees the model and compensates users damaged by poor information (Stubkjær 1994: 17-18). Another way of looking at it is by saying that the system of land registration provides "the means for recognizing formalized property rights, and for regulating the character and transfer of these rights." (Dale/McLaughlin 1999: 36)

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[56] When the Cadastre gained its independent position it was said: The mission of the Cadastre is "at the lowest possible cost to serve the purposes of legal security in social relations in matters of real estate (including ships and aircraft) and to promote the best possible provision of information to the community in this respect." (Besemer 1994: 15).

4.2.2 Whole (and Emergent Properties)

Administrators and professionals involved in systems of land registration, regularly get so absorbed in the legal and technical intricacies of the system, that they seem to lose sight of the system as a whole. Even when society does not support and rely on the system, they –often with the best of intentions– are discussing or implementing improvements to one small task, without changing the fundamental shortcomings that cause the lack of trust in the system. Therefore one has to start by looking at the system as a whole, with society's view on the system as the important emergent property of 'trustworthiness'.

system as a whole
As any open system, the system of land registration, can be depicted as a 'black box' in an input - throughput - output model. Since the focus is on increasing the legal security of people holding interests in land with the system of land registration, the input into the system is the (factual) land tenure situation and the output the legal security (Figure 4.5).

Figure 4.5; The system of land registration abstracted as an input - output model

As was indicated in § 2.2.4 only systems of land registration based on the two more advanced types of transaction evidence can really be called 'land registration'. In such cases written documentation plays an important role. Therefore one could decide to see a system of land registration primarily as a legal document processing system, and label the 'transfer document (deed)' and the 'title document (certificate)' as in- and output, and leave them outside our system itself (Figure 4.6).

Figure 4.6; The system with emphasis on legal document streams

Another way to look at a system of land registration is to see it primarily as an information processing system. This is in line with Nichols' previously mentioned PhD study, in which she describes 'land registration' as 'the official, systematic process of managing information about land tenure' (Nichols 1993: 4). Then 'agreement' is labeled as input and 'information' as output. (Figure 4.7).

Figure 4.7; The system with emphasis on information streams

The two systems depicted in Figure 4.6 and 4.7 do represent a rather technocratic viewpoint, which is too narrow. In relation to Figure 4.6 the 'transfer document (deed)' should be included within the system (compare the reference made to de Haan in § 4.1.5). This gives the opportunity to look into different roles and ways of producing deeds as part of this study. This holds even more for the 'title document (certificate)', which is of great legal meaning in some cases, but is just an extract depicting the information available at a certain moment in other cases.
In Figure 4.7 the emphasis is put too much on the information component and the land management issue, only an side issue in the context of this study. It undervalues the importance of land registration in providing legal security for owner and purchaser of land. The 'information' is not the end-product, and should be included within the system. Therefore the abstracted depiction of Figure 4.5 best represents the focus of this study.

trustworthiness
An important reason for something to be seen as a system is found in it having emergent properties. For systems of land registration the main emergent property is 'trustworthiness'. This can not be attributed to one or a few elements (compare § 4.1.2), but it depends on the system as a whole. As can be derived from § 2.3.2 'trustworthiness' could be seen as the ultimate expectation society has of the system of land registration, society wants to be able to trust the system. If that is possible or not depends on the way in which all the features mentioned there are being met. It depends on society's view on the system of land registration. Society has to realize that it needs a system of land registration, society has to support the system of land registration in place and society has to use and rely on the system of land registration and the information from it. Especially with regard to the last point it is not so much society at large, but individual members of society that have to use and rely on the system of land registration, especially when they want to transact or accept a mortgage. Different individuals can be in different circumstances or might perceive their circumstances differently. This is likely to influence the balance between incentives and disincentives to use and rely on the system of land registration, and in the end the level of success of the system of land registration. The usage of the system can be seen as a critical factor in determining the system's effectiveness (compare Barry 1999: 82). In the most effective and trusted systems of land registration its use has become self-evident, and the system is taken for granted (this holds to a large extent for the cases *the Netherlands* and *Austria*).

The 'trustworthiness' of the system depends mainly on the administrative layout and day-to-day operation. Although those are influenced by the limits of the law and other preconditions, it is the "daily practice" that really counts. Similarly Twaroch and Muggenhuber say that "Independent from legal and technical solutions a LAS[57] is successful when all partners involved in land management (owners, banks and agents dealing with information on land) can trust in this system." (Twaroch/Muggenhuber 1997: 5). Unfortunately the administrators and professionals involved in the system, regularly get so absorbed in the legal and technical intricacies of the system that they seem to lose sight of this.
In this study, however, it plays an important role, as can be seen in the case study. Under the heading "daily practice versus 'law in books'" the situation in this respect is reported from each of the countries studied (see chapters 5 and 6).

[57] **L**and **A**dministration **S**ystem, which includes land registration; see § 1.1.

4.2.3 Environment

The system of land registration has a boundary with its environment. One can easily think of several useful 'systems' which partly overlap with the system of land registration. For instance the land tenure system of a country; some characteristics of the rights that have to be registered are part of both systems, but rules for termination of (unregistered) tenancy agreements are not within the system of land registration. Another example can be the system of land administration. Elements dealing with taxation and certain characteristics used for that (like soil quality) are part of the system of land administration, but not of the system of land registration. Another example can be the land market system. Whereas the elements dealing with the establishment of a mortgage are part of both systems, elements on determining of interests rates and payback schedules are not part of the system of land registration.
It is very hard to draw the line. The system of land registration is a clear example of an open system. The goal of the system of land registration is only useful in relation to other activities. If people (who for instance just got their family land restituted) are not willing to sell their land rights because of emotional reasons, a good system of land registration which would facilitate land transfers, would hardly help to activate the land market. If people (who are subsistence farmers) have virtually no monetary income, secure land rights, would hardly help to get them credit.
This study looks at a system of land registration as defined with its limited goal. That does not mean that getting a good system of land registration will solve all land administration problems or activate the land and credit markets. A good system of land registration is just one of the pieces of those puzzles. Nevertheless an important one, which is often misunderstood or only partly treated.

4.2.4 Relationships

The relationships, or relations, exist between the elements. Relations of a certain type make up an aspect system. This study focuses on three aspect systems and their interrelations, being the technical, legal, and organizational aspects (see § 1.1.3). Other types of relations, belonging to other aspect systems, are considered to be part of the environment in this study, like the financial-economic, social-cultural and historic aspect systems. In no way does this mean that they are not important!
With regard to the financial-economic aspect system, the importance for land registration is discussed in § 1.2 and for instance in Williamson (1997). The importance of the social-cultural aspect system can clearly be seen in the case study and for instance in Williamson and Fourie (1998). Nevertheless, the focus in this study is on the technical, legal, and organizational aspects systems of systems of land registration.

4.2.5 Elements and their Attributes

In a system the elements are the smallest parts the observer wants to look at for the benefit of his or her study. In this study the system of land registration is modeled at three levels, each of them leading to its own set of elements. This is done through breaking down the goal into functions that need to be fulfilled to achieve that goal. And a part of the functions is further broken down into tasks that will have to be performed to fulfil the functions.
Systems can be seen as static and dynamic systems (§ 4.1.1), and systems are a description of reality from a certain perspective that suits the researcher (§ 4.1.3). For this study it is very useful to describe the system of land registration both as a static and as a

dynamic system. Both have the same goal, but each of them is described with a different set of functions (which are the elements at that level), which will be presented in the next paragraph.
In § 4.3.4 two functions of the system of land registration (updating through transfer of whole parcel and subdivision) are broken down into tasks. At that level these tasks are the elements, and their attributes are represented by a set of answers to questions on if, how, by whom and with what these tasks are performed (see Figure 4.11).

4.3 Modeling Land Registration

4.3.1 Modeling

Like any model, this model will have its limits. A model is only a description of (a part) of the real world. It is influenced by *prima facie* decisions, some conscious, some unconscious, and by a certain objective that one is trying to achieve with the model.
Never forget that we are talking about our notations of reality, rather than about reality itself. And a model of a system of human activities will express only one particular perception of a connected set of activities out of a range of possibilities. Therefore we cannot expect the kind of match between reality and model which natural science seeks, and which it is possible to achieve in the case of natural systems. (Checkland 1999: 249)
With regard to cadastre and land registration this was formulated in a FAO publication as "No model can be simply transplanted, as there are differences, national, infrastructure etc., and there is no ideal model." (FAO 1993: 18). In relation to the wider topic of land tenure Kasanga said "But the model makes no claim to the existence of a perfect land tenure system anywhere. In the final analysis, each system much be judged against set historical, socio-cultural, economic and political values; with due regard to the present and future needs of any given society. In doing so, it is essential to reach a majority of those whose lives and struggles really depend on tenurial arrangements." (Kasanga 1988: 22-23). But on the other hand Holstein reacts to managers in some countries stating that their country is unique and their land laws will be also, with "yes but modern land administration principles are common to most countries." (Holstein 1996: 9).

system of land registration

- static (register)
- dynamic
  - adjudication
  - updating
    - transfer (of whole parcel)
    - subdivision

types of systems
The difference between static and dynamic systems is very appropriate for describing systems of land registration. Both types depict a relevant perspective of the system of land registration. Within the static form the emphasis is on describing which information is kept and how. For each of the three functions of the dynamic form the processes involved have to be described and understood. Both will be elaborated now.

4.3.2 Model of the Static System of Land Registration

static model
When looking at the static system of land registration one sees the question who (which person or group) holds how (with which right) where (which property). Each of these three questions can be related to one of the main objects, being owner, right and parcel. These objects are closely related, and only when they are related one can talk about a system of land registration. The relations are shown in Figure 2.1 (a simplified version of the figure

in e.g. Henssen 1995: 6). The owner represents an individual or a group of people, and gives the answer to the question 'who'. The parcel represents a certain part of land and gives the answer to the questions 'where' and 'how much'. The right or title represents a certain legal relation (ownership, leasehold, other form of tenure, etcetera) and gives the answer to the question 'how'. Each of these three entities has to be identified correctly and unambiguously; so there has to be a unique identifier for each of them.

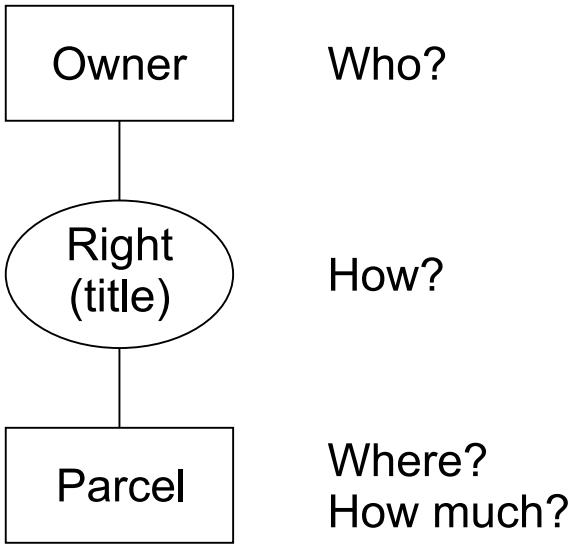

Figure 2.1; Core entities connected

In ‘Cadastre 2014' a down pointing arrow is added to Henssen’s figure on which Figure 2.1. is based. This is then referred to as the ‘deeds approach’, whereas an upside-down alternative is referred to as the ‘title approach’ (Kaufmann/Steudler 1998: 37-38). The adding of a one-directional arrow to the figure is regrettable. It undervalues that the relationship between persons and land is bi-directional (humankind to land relationship). It can be agreed that what they call the ‘deeds approach’ is a limited way of looking at the issue. In terms of this study it could be named a view from the perspective of the legal aspect system. However, their alternative view is equally limited to the point of view of (geo) information management (a part of the technical aspect system). Such a view runs the risk of seeing land administration more and more as an end in itself, without looking at the (different) goal(s).
The goal of this study being ‘providing legal security to the owner and purchaser of land’, this static register can be used to reassure the rightholder in his or her right, it can convince the mortgagee to give the credit and the potential buyer to buy.

In order to achieve the goal given to systems of land registration in this study, certain functions have to be fulfilled. Related to the static model, each of the three entities from Figure 2.1 has to be identified correctly and unambiguously. The identification of each of all three can be described as the three main functions of the static model.

identification of owner
When an individual person has to be identified, usually the name is used. In most cases the date of birth and home town have to be added. This is especially important when certain names or name types are very common. Of course people can lie about their name, so

some kind of safeguard on the 'true identity' has to be made (e.g. proving it by a government issued id-card). When new nations emerge, certain cultural and linguistic changes may lead people to change their names or write them with a different alphabet. This causes problems in identifying persons. When a group of people is involved, it is much more difficult. The group can have all kinds of forms. It can be a tribal unit (tribe, skin, stool, clan, family), a married couple (with several possible matrimonial regimes regarding property) or a 'legal person' (with different types and different persons who are allowed to act in its name). Nevertheless the identification of the owner is usually the easiest of the three.

identification of parcel

For the identification of parts of land many systems are used in land registration. The basic problem is that land is by origin one continuum. The object of a right is always a part of that continuum. Or as Snijders said it "Real properties are, with regard to their limits, basically liquid" (trans. D4 from Snijders 1991: 125). Therefore this part (usually called parcel) has to be separated from the rest of the continuum in some way, and given some kind of identification to refer to it. It is important that this is done in a way that it becomes clear to others than the parties involved. If one wants the parties to have unlimited freedom in creating boundaries, one needs to make the factual description in the deed decisive, and a cadastral division can only be a tool in this. Most countries, however, do limit the freedom in creating boundaries and the parties have to have their intended boundaries drawn by professionals and/or checked by relevant authorities. In the latter cases it is easier to ensure that they are also made clear to third parties.

Identification is sometimes done solely by use of written descriptions, sometimes by the topography in the field and in other cases surveying plays an important role. With one of these methods the boundaries might become clear, but still it is difficult to indicate in a deed or in the registration which of the parcels is meant to be the object of a right. Use of a simple and clear identification, which can be achieved through a system of unique numbers for every parcel, facilitates this very much. A complicating factor is that parcels will be split and amalgamated regularly. So a parcel will change occasionally, which means that the unique identifier has to change too. The number system should allow for this. A way of dealing with boundaries and parcel identifiers in an efficient way is the use of cadastral maps. The system used for identification of parts of land and their boundaries has a very large influence on the structure of land registration. Or as Snijders said "a tool like the cadastre can not be missed for identification thereof." (trans. D5 from Snijders 1991: 125). Polman even claims that a unique identification is indispensable for an effective system (Polman 1991: 99).

It is important for the prime goal of legal protection and vital to most tasks supporting the government (as a base for a land information system (LIS)). All three aspects this study looks at, play a clear role here; the techniques used, the status boundaries are given in the laws and the way surveying and registration are organized (especially in relation to one another).

identification of right

The identification of the right or title is not always as easy as it seems. First of all it depends on the land tenure situation in the area concerned. When this is dominated by customary law it is not easy to get clear definitions of the different rights in existence. Since the understanding of rights (and even the legislation regarding them) often changes in the course of time, this is also the case in jurisdictions with statutory land law, although

somewhat milder. So even when the owner and the parcel stay the same, the exact meaning of the relation between them is subject to variations.
For registration purposes the best solution is a closed system of rights that can be registered, meaning that only a given number of well defined rights exists. But of course the registration should exist to serve whatever land tenure system is felt appropriate for the jurisdiction. Nevertheless changes in the land tenure situation (land reform, individualization of customary rights) have been combined with land registration projects. This sets off a fear with certain groups in some countries that the introduction of a land registration might lead to abolition of customary land tenure (Henssen 1994). But again the land registration should be a tool for the land policy that is undertaken, not the cause of changes.

These three identification functions can also be found on a list of seven core functions of land registration systems given by Wallace:
1. Identification of the land parcels.
2. Identification of the owner.
3. Verification of the interest.
4. Identification of the interest (obtained, the time and mode of its acquisition)
5. Increase of the proprietary protection (available to the interest).
6. Transaction facilitation (by verification of the title, not the identity, of the person conveying land).
7. Proof of registration. (Wallace 1999: 302-303).

The additional functions Wallace gives (3, 5, 6 and 7) are mainly of legal, evidentiary origin. This also holds for the first three of another list of (five) functions of land registration given by Nichols, which includes notice, validation, monitoring and enforcement, revenue and management of land tenure information[58] (Nichols 1993: 131-135). The additional functions of Wallace are more related to the actual transfer of property rights and interests, which the dynamic model of the system of land registration deals with.

4.3.3 Model of the Dynamic System of Land Registration

dynamic model
The dynamic system of land registration has to fulfil three functions. These are described by Soni Harsono as “the three main cadastral processes of adjudication of land rights, land transfer and mutation (subdivision or consolidation)”. (Soni Harsono 1996: 3-4).
The first process, adjudication –also called first registration or land titling– deals with the initial compilation of the registers, and is extensively described in § 2.3.5. Once almost all land (that is being traded) has been brought on the register, this function becomes dormant, as is the case in *the Netherlands* and *Austria*. In most countries of the world that is however not the case yet, including *Indonesia* and *Ghana*. But the work done on initial compilations becomes quite useless very fast, when the systems is not paying enough attention to updating the registers through processing the subsequent transfers.
This updating can take the form of the other two processes described by Soni Harsono, which can also be called transfer (of whole parcel) and subdivision. These are of course only useful when something is already present as a result of earlier adjudication. The first form deals with updating the existing registers with the subsequent changes due to the transfer of rights to an unchanged property unit, whereas the second deals with the

[58] The last two of Nichols' list are more related to the wider public sector goals of land registration.

updating of the existing registers (usually including maps) due to subsequent changes in the boundaries of the property unit –sometimes called property formation– which can not only take the form of subdivision, but also of consolidation. These three functions of the dynamic system of land registration are represented by the longer arrows in Figure 4.8. The static system is represented by the mushroom. With the exception of 'adjudication', this can be easily compared with Burdon's model of developed (title) registration systems which somewhere deal with legal input, survey input, and an overview (Burdon 1998: 150).

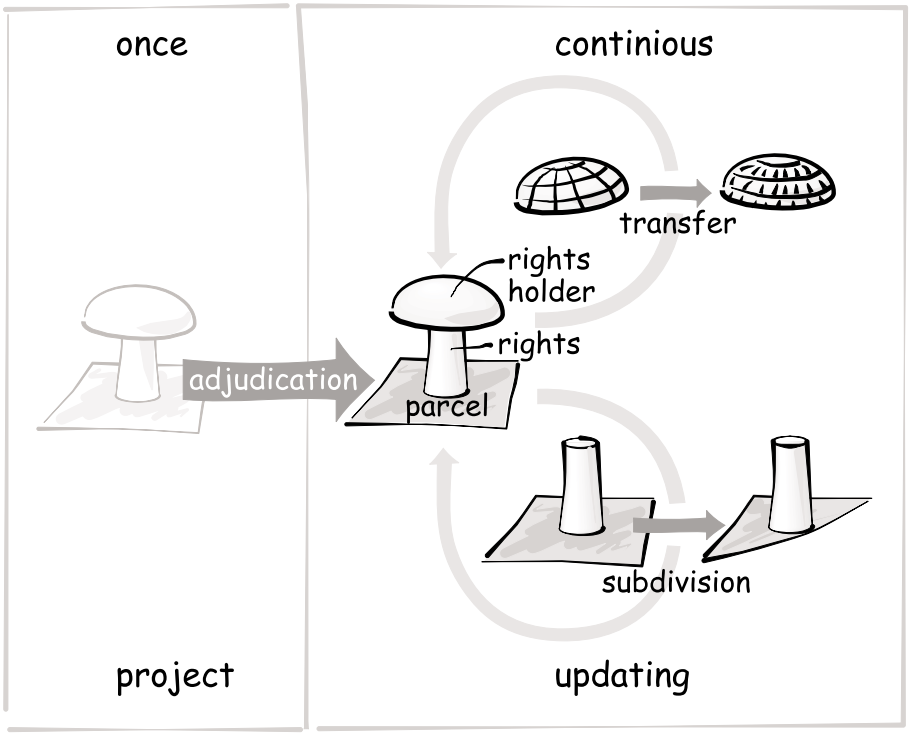

Figure 4.8; Dynamic model of the system of land registration ('mushroom' encompasses the static model)

Of the two varieties of updating, the transfer of rights is the most common. It deals with the situation that another person takes over one or more of the land rights in a defined parcel from another person. If the system is working properly the former rights holder is known to the system, and upon receipt of the notice of change the information can be updated. Such changes take place for several reasons, of which the sales transaction is the most important one in case of an active land market, and the inheritance in case of more frozen situation. Especially with regard to the sale the security of the purchaser can be greatly enhanced when there is a good system of land registration. In principle the procedures for this situation can and should be kept relatively simple, not involving too many organizations.

Subdivision (or consolidation) is less common, but also of great importance. It deals with a change in the part of the continuum that is regarded as one parcel. "[R]eal properties are, with regard to their limits, basically liquid" (trans. D6 from Snijders 1991: 125). Therefore subdividing and consolidating existing parcels should be possible and is often even desirable. These changes often take place in conjunction with a change in the land rights and the usage of the land (or buildings). The formation of a new property, needs to be accompanied by the redefining of a newly identified parcel, which will then become the object to which the land rights are (re)connected. The procedures for this are often quite

complicated. This is partly because of strict control necessary to come (again!) to a clearly defined and uniquely identified parcel. Further complications are introduced in most societies because of land control mechanisms (need to get one or more permits) and the fact that these changes coincide with changes in usage and/or the rights. (compare Mattsson 1997: 13)

For each of these functions the processes involved have to be described and understood. With regard to adjudication this is done in § 3.2.5. The transfer and subdivision are described hereafter.

transfer (of whole parcel)
The most common procedure is the one that deals with the transfer of an existing property (parcel), in most cases due to a sale. The main line of this can be described as follows.

The present owner and the owner-to-be agree that they will sell and buy a certain unit of land. Somehow they have to make sure they are talking about the same unit of land, and they have to make sure their opinion about this is in concurrence with the rest of the world (especially the persons owning the land around it).
This is done by having witnesses of their opinion, in most cases in the form of a written document, which very often involves an expert (solicitor, notary, landbroker in South Australia).
This document is then the proof of their intentions, and to announce it to others, and to safeguard it against (later) fraud, (a copy of) the document or form is put in the hands of an independent party, who is known to society as the one who has this document, and who in virtually all cases is a part of the public sector (either part of the judiciary or of the (local) governmental administration).
This independent party will accept the document for its registration only if certain conditions are met. Sometimes the check is limited to purely formal conditions, in other cases the check includes all kinds of legal aspects of the transfer itself. If the document is accepted, the registration will proceed. This includes in any system the archiving of the document (which can be called recordation, and sometimes constitutes the legal effect of registration), and the updating of all kinds of lists, registers, ledgers or indexes which refer to the document, contain the names of the parties and in most cases a description of the land concerned. There are numerous systems in which the replacement of the name of the seller by the name of purchaser in the page of the relevant unit of land constitutes the legal effect of registration.
In certain countries finally a title certificate (or land certificate) is issued. In South-Africa the processed deed, called title deed, functions as such.

subdivision
With regard to changing the property as such, the complications are greater, and so is the variety that can be found in different countries.
First comes the intention of the parties with regard to how they want to form the property that should be considered. Nevertheless most societies bind this to a large extent by introducing all kinds of land control rules. For instance minimum size for agricultural plots and maximum acreage for farms as a whole are quite common (e.g. Bulgaria demands minimum of 3 decares for arable land, whereas Denmark allows the neighbors to take over the land when a farm is larger than 70 hectares). In case of new urban developments the (agricultural) mother parcel has to be subdivided in (housing) parcels that follows the lines

drawn for this purpose on the detailed development plan. Most countries have a provision in their cadastral regulations that does not allow parcels under a certain size, just to avoid inefficient cadastral activities and prevent non-usable situation from arising.

In most cases where a system of land registration is operating, the new boundaries that a subdivision creates will have to be determined by some kind of geodetic activity. In a rare exception existing topographic features visible on a map or (aerial) photograph can be used to do this in the office, but in virtually all cases new measurements will have to be made (usually by field survey; airborne methods are not so efficient here because of the incremental nature of these changes). Quite a number of societies even demand the erection of visible boundary markers, being either fences, ditches or hedges on the one side, or special corner stones ('monuments') on the other hand.
The cadastral surveys usually need to have been completed before the land rights can be vested in the newly formed properties. For instance the cadastral map and plans have to be ready in their updated form before the transfer documentation can be fully processed. A rare exception can be found in the Netherlands were the land transfer can take place of verbally described part of an existing parcel. The new boundary will be surveyed a few months later after which the map is updated and the temporary identifier (the old one with a sub-number added) will be replaced by the new identifier.

<u>other procedures</u>
In addition to these main procedures, procedures will be necessary to allow for the vesting of limited rights (for instance a long lease, which leaves the ownership as it is, but transfers a strong, but more limited right (some of the sticks of the bundle so to say)) to another person. Usually the same procedure can be used as for the transfer of all rights one has, although the register will have to be a bit more complicated to allow for this. It is even possible to limit the lease to a part of the property. Most countries treat that as a sub-division, creating a parcel with the owner in full control and another parcel where the lease divides the control among the two parties.
The status of a holder of land rights can also change when the rights and the parcel remain the same. This is for instance the case when natural persons marry or divorce, or when companies merge. Of course there should be procedures to accommodate these changes as well.

4.3.4 Tasks for Updating a System of Land Registration

Whereas the goals deal with 'why' a system of land registration is needed and the functions indicate 'what' has to be done to fulfil those goals, the tasks focus on 'how' it is done. Here the tasks that have to be performed in relation to transfer and subdivision in the context of the goal of providing legal security to the owner and purchaser are looked at. Possible related tasks needed to fulfil land control functions are not taken into account.

In Figure 4.9 the first two rows (numbered *a* - *c* and *h* - *l*) indicate the consecutive tasks for performing a transfer. In general most of these tasks can be found in each country, but some tasks might be missing in some countries. For instance tasks *k* and *l* are not present in countries operating a 'deeds registration' (like *the Netherlands*), and task *l* is even missing in numerous countries operating a 'title registration'.

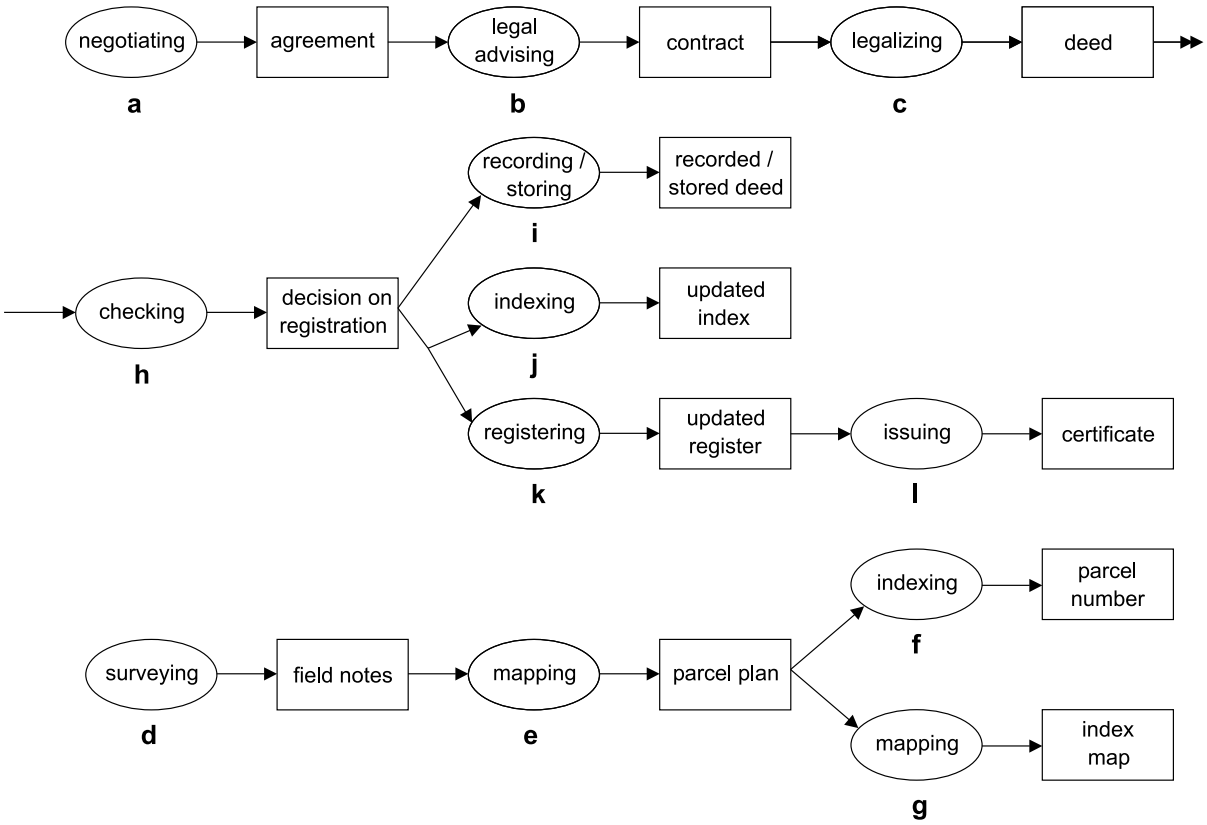

Figure 4.9; Relations between the tasks for updating a system of land registration, with products

The third row of Figure 4.9 (numbered *d* - *g*) deals with the tasks of the subdivision as such. In most countries these tasks are performed immediately before the checking of the documents offered for registration, usually after the deed has been prepared. This is also the order used in Figure 4.10. Sometimes the subdivision will already take place before the contract is legalized, and occasionally the subdivision will be executed after registration of the rights to the 'part-parcels' (*the Netherlands*).

In Figure 4.10 the tasks are more elaborated. For each task a short description is given, and it is also indicated which expert performs the task and whether the task relates to the technical, legal and/or organizational aspect system. The tasks relate primarily to one aspect system (indicated by ●), but even at the task level regularly some link is present to another aspect system (indicated by ○).

	task, with description	type of expert	aspect system		
			tech-nical	legal	organi-zational
a.	**negotiating** between seller and purchaser	real estate agent		○	
b.	**legal advising**, including assisting in the legal preparations of the transfer	(para) legal		●	
c.	**legalizing**, to give a certain authenticity to the transfer deed	(para) legal		●	
d.	**surveying**, to determine the position of the parcel boundaries	surveying/ mapping	○/●	●/○	
e.	**mapping**, to depict the parcel in a graphical way	surveying/ mapping	●		
f.	**indexing**, to take care of a unique identifier for a parcel	surveying/ mapping	●	○	
g.	**mapping**, to keep an index map of the registered parcels	surveying/ mapping	●		
h.	**checking**, to decide if the intended transfer will legally take place	(para) legal		●	
i.	**recording / storing** of the deed in an orderly fashion	registration		○/●	●/○
j.	**indexing**, to make references to the deed in relevant indexes	registration		○	●
k.	**registering**, to update a parcel based property register	registration		●	○
l.	**issuing**, to supply the purchaser with an updated (title) certificate	registration		●	○

Figure 4.10; Table with tasks, involved experts and related aspect systems for updating a system of land registration

In addition to the fact that some tasks might be missing in certain countries, the way in which the tasks that are present are being performed differs in many respects from country to country. One way of representing these differences is by formulating a number of questions to be asked.

To use the systems terminology described in § 4.1.2 the tasks can be seen as the elements of the system of land registration, with the attributes of these elements differing from country to country. For each task the following questions can be asked; their answers constitute the attributes of these elements:

i. is this task performed at all?
ii. who performs this task (whose role is it)?
iii. is it mandatory to have the task performed?
iv. what is the legal effect of the task on the transfer?
v. what is the legal consequence of a mistake in the performance of this task?
vi. is the 'losing' party indemnified in the case of a mistake?

Answering these questions for all described tasks, gives us an overview of the system of land registration at hand. This can be done in the form of a table (see Figure 4.11). Such tables are one of the ways in which the results of the case study are presented in chapter 6. Tables are made for the systems of land registration of *the Netherlands*, *Indonesia*, *Austria* and for both the deeds and the title registration in *Ghana* in Figures 6.1, 6.3, 6.5, 6.7 and 6.8.

question task \	done	who	mandatory	legal effect	consequence of mistake	indemnified
negotiating						
advising						
legalizing						
surveying						
mapping						
indexing						
mapping						
checking						
storing						
indexing						
registering						
issuing						

Figure 4.11; Table of tasks and questions of a system of land registration (empty master)

In this study a representation is given of the two updating functions of the system of land registration in a table with the answers to questions for each identified task (attributes of elements). In the context of this study –especially the goal of land registration which is focused on– these are the most important functions. Most of these tasks have to be present and be performed in a safe, quick and not too expensive manner to get a system that is going to be used; that is trustworthy.
This type of representation should be possible for other functions that have to be fulfilled in a system of land registration as well.

4.3.5 Need for Further Modeling

The modeling results should be seen in a proper perspective. In the first place it is a first attempt in this direction. Hopefully others will step in and help to refine the model. In the second place the models concentrate on the technical, legal, and organizational aspects. The social-cultural and financial-economical aspects are not forgotten, but they are neither in the main core of the study nor in the heart of the model. In the third place any study, and certainly a case study, is biased against the case(s) taken into account. Here the author's primary training in the Dutch system of land registration will have formed important parts of the reference system (although starting as a student he has visited relevant organizations in other countries, see Annex C). The three other countries used are very different and represent several important groups of land registration types, but missing are, for instance, systems from the Far East (like Japan and South-Korea) and the Nordic countries (Finland and Scandinavia). Furthermore countries with strong Napoleonic influence (like France, Spain and many of their former colonies) are represented in a very limited way (only through the Netherlands). In a similar way systems related to English common law and the Torrens system are only indirectly represented through Ghana and Indonesia.
Nevertheless, these models are built on applying the systems approach to a wealth of knowledge about land registration. This knowledge is taken both from the general literature available and from the information collected through the case study (see next two chapters).

4.4 Concluding Remarks

The systems approach can be characterized by its explanatory appeal, also with regard to systems of land registration.
Systems can be classified in different ways, including closed versus open systems, and static versus dynamic systems. The system of land registration is seen here as an open system, that is influenced by, and has influence on its environment. For this study it is useful to look both at a static and at a dynamic system of land registration.
Systems have emergent properties which can not be attributed to individual elements. For systems of land registration their trustworthiness qualifies as such. The level of trustworthiness of a system of land registration indicates whether the system achieves its societal goal(s); if the people trust it and are willing (and able) to use it.
Within a system two types of part systems can be distinguished. Subsystems look at some of the elements, whereas aspect systems look at a certain type of relations between elements. Cadastre and land registry are often the first subsystems people think of regarding systems of land registration. In this study the technical, legal, and organizational aspect systems are taken along.
The definition of system used in this study calls for a goal-driven system. The goal of the system of land registration is ‘providing legal security to the owner and purchaser of land’. In order to achieve this goal functions are defined that have to be fulfilled.
For the static system of land registration the most important functions deal with the identification of the three main objects of land registration (the owner, the right and the parcel). For the dynamic system of land registration the functions are adjudication and updating in two varieties (transfer of whole parcels and subdivision).
In order to fulfil those functions certain tasks have to be performed. A model of such possible tasks is made for the two updating functions, with a set of questions with regard to each task. This model is used later for the presentation of the results of the case study (see § 6.4). In systems terminology these tasks are the elements of the system, whereas the answers to the questions are the attributes of those elements.

In this chapter the modeling of systems of land registration leads to models at three levels of detail. The most important models are depicted in Figures 4.5, 4.8 and 4.9/4.11.

Starting from the goal formulated for the system of land registration as a whole, it became clear that the functions which needed to be fulfilled and the tasks needed to be performed did not match one-on-one with existing organizational structures or the views from the perspective of separate aspect disciplines. Therefore it can be concluded that the systems approach was useful, even necessary, in obtaining the aim of this study.

5 CASE STUDY DESIGN

As is quite common in research related to information supply (Brussaard 1995: 39) it was quickly understood that the best methodology for collecting empirical data in this study would be the case study methodology. This follows from comparing the characteristics of the topic of this study with the particularities of case study research. This study deals with ‘the whole process’ of providing security to people holding land. It is hard to define 'the whole process' and to draw the boundary between what is still part of it, and what should be considered to be part of the environment. This matches with Yin’s description of a case study in which a contemporary phenomenon is studied, with the boundaries between phenomenon and context not being evident (Yin 1994: 13). Furthermore the use of case study methodology is being recommended for the –highly related– field of cadastral reform and development (Williamson/Fourie 1998, Silva/Stubkjær 2002).
This case study aims at getting an integral picture of the system of land registration in the countries studied, with special attention to the way the legal, technical, and organizational aspects and their interrelations are taken care of, and whether this gives an effective functioning land registration to the countries. These integral pictures can then be used as a base for more general conclusions.

In § 1 a further explanation of the meaning of case study research and its applicability to this type of research is given.
In § 2 the way the case study was set up and undertaken, including the choice of the four countries that were studied, is described. In accordance with Yin’s recommendations this is done by means of a research design and case protocol.
In § 3 a few concluding remarks are given.

The results of the four cases studied (the Netherlands, Indonesia, Austria and Ghana) are laid down in separate case reports. The main points derived from those are presented in chapter 6, both for each case separate, and for the case study as a whole.

5.1 Case Study Research

5.1.1 Why Case Study Research?

From the early beginning it has been clear that this study should include a multiple case study. This can be explained by comparing the characteristics of the topic of this study, with the particularities of case study research. The topic of this study is in principle the process of providing security to people holding land. Although an emphasis is made on the role of land registration within this process, it is 'the whole of the process' that should be considered. Obviously 'the whole of the process' is hard to define, and it is possible to keep on extending it until one is looking at virtually everything in society. Although this last given extreme is not the intention, limiting the research to a small, well-defined part of society is not either. The research should concentrate on the role of land registration in providing security to people holding land, within the context of society as a whole. Any specifics from whichever part of society which will influence that, should be taken into consideration. And land registration is due to the inseparable relationship between people and land, intimately tied to the social structure and culture in any country (Williamson/Fourie 1998: 283).

A case study can be described as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin 1994: 13). Another description states that "a case study involves the intensive studying of a phenomenon in its natural situation, in such a way that the interrelation between the relevant factors is conserved (trans. D7 of Hutjes/Van Buuren 1992: 15). Both descriptions lay an emphasis on the surroundings of the subject under scrutiny being a part of the study. This is very useful for this study, since the boundaries between the subject and its surroundings are hard to define (in concurrence with Yin), and the interrelations between the factors play an important role (in concurrence with Hutjes and Van Buuren).

5.1.2 Case Study Methodology

introduction
In literature there are authors who are not particularly fond of case study research, and who regard it as a ‘soft' way of doing research. This opinion can in general be regarded as outdated, but still has followers. Especially researchers familiar with quantitative research, frown a bit on this qualitative method of doing research. It has to be said that in the past many people undertaking case studies did this without much preparation or any specific skills, regularly leading to 'sloppy' case studies. Nowadays there is ample literature on how to do case studies, which emphasize the role of good preparation, esp. a rigid case study design (Yin 1989, Yin 1994, Hutjes/Van Buuren 1992, etc.). In Dutch literature a lot of positive references are made to the design and methods suggested by Yin. This encouraged the use of Yin as the base of the rest of this chapter.

basics
Case studies have traditionally been considered to be 'soft' research, but doing case study research is remarkably hard (Yin 1989: 26, Yin 1994: 16). Although the case study is a way of investigating an empirical topic by following a set of prescribed procedures (Yin 1989: 25), these procedures leave room for far more discretion of the researcher than in the other research 'methods'.

Nevertheless it is very dangerous –and this is the main cause for the criticism of case study research– to undertake a case study by just doing it. The strength of a research project undertaken with a case study will increase manifold, when it is undertaken on the basis of a clear research design, drawn up early in the project. The components of this research design will be described in § 5.2.1, but one important part of this is the case study protocol (§ 5.2.2), in which the 'boundaries' of the data collection phase are given, and in which the basis for the analysis of this data is laid down in advance. Having a well-formulated theory (although not final of course) in advance is an immense aid in defining the appropriate research design and data collection and also becomes the main vehicle for generalization of the results of the case study (Yin 1994: 32). Even though this usually takes the form of a conceptual model, not a complete theory (Hutjes/Van Buuren 1992: 32). Even when this model gives a vague base, it usually lays down some semantic relations (Hutjes/Van Buuren 1992: 44).

The research process should ideally be an interaction between research question, data collection and analyses (Hutjes/Van Buuren 1992: 99).

A short description of Yin is given by (Boskma/Herweyer 1988: 61): Doing research is making choices, make these choices deliberately and describe them.

5.1.3 Methodological Triangulation

There is quite a lot of difference of opinion between supporters of quantitative research (like survey[59] and experiment) and supporters of qualitative research (like the case study). This regularly leads to strong debates. Both methods, however, are mainly suited for different circumstances. In many situations it is useful to combine a quantitative and qualitative research method to get the best result. For instance starting out with a wide survey, and then going into depth in just a few cases. Another situation could best be dealt with having a case study to postulate hypotheses, which consequently are used as a base for questions in a survey. This combination of methods is called the principle of methodological triangulation. (Hutjes/Van Buuren 1992: 20)
This triangulation is not introduced in this study as such. But in the field of land registration and cadastral systems several surveys have been conducted in the last decade. They were mainly connected to the FIG[60] and WPLA (called MOLA before), and mainly aim at benchmarking and best practices. WPLA has published consecutive reports of its results (e.g. UN-ECE 2000), which contain much valuable information. It, however, also shows the weakness of surveys in this field. Obviously the questions are strongly colored by the way the persons involved in making them look at the topics at hand. This leads to some of the questions that are asked being of little or no relevance in certain countries, and some questions of importance in certain countries not being asked. Furthermore some of the questions (certainly the multiple-choice ones) do not allow for giving the ‘grey’ reality of the country in question, forcing it into a black or white answer. Also the answer to one question,

[59] In this chapter the word ‘survey’ mostly refers to the research methodology in which a large group of people receives a questionnaire. In the rest of this report ‘survey’ refers to the work of the land surveyor as in surveying and mapping. To avoid confusion the word ‘land’ is added for the latter in this chapter.

[60] Both by O.I.C.R.F., one of its permanent branches, and by Commission 7 and its working groups; not all of these have led to extensive publications, except for Steudler et al 1997.

might only give the right impression when combined with the answer to another question, which will not always be apparent (certainly not if the second one was not asked). This type of question is likely to be useful for getting some general idea of the types of systems that are used in different countries. And when repeated at different times, certain trends may become apparent. It is however not the way to get an idea of how and why certain systems as a whole do function or not. For that the survey –by its nature– does not give enough attention to the interrelations between different aspects.

Case study like approaches have also been undertaken in the last decade by several researchers, like Burdon's study into 'Automated Registration of Title of Land' (Burdon 1998). Somewhat in the middle of both approaches is the increased attention for 'best practices', where based on broad knowledge from a wide variety of countries, comparisons are made (Williamson 2001).

5.1.4 Analytical Generalization and Case Selection Strategies

generalization
Usually it is the intention of the researcher doing a case study to declare the results from the case study of a more general validity. This is often called the process of generalization. Especially when doing a multiple case study, like in this study, one should be very careful not to generalize in the way one is used to from other research methods like the survey. Using statistical generalization with a case study implies a fatal flaw, since the cases are not the same as sampling units (Yin 1994: 31). Generalization of case study results should be done through so-called analytic generalization, whereby you generalize to theoretical propositions and not to populations or universes (Yin 1994: 10). This type of generalization can also be called theoretical generalization (Hutjes/Van Buuren 1992: 64). Swanborn, on the other hand, finds the term theoretical generalization too pretentious (Swanborn 1995: 248). In any case there will never be a representative case or set of cases.

selection strategies
To strengthen the relevance of theoretical generalization, it is important to make the right selection of the case(s) to be studied. If the aim is to make theoretical generalization possible, the selection of the cases can be seen as a dominant factor (Hutjes/Van Buuren 1992: 60). The reasoning behind the sample of cases that is chosen can be based on one of the following strategies:

- extreme cases;
- typical cases;
- maximum variance;
- minimum variance;
- critical cases (Hutjes/Van Buuren 1992: 62-63).

In a comparable listing Swanborn includes the selection of cases that are in a different phase of development (Swanborn 1994: 331). Yin draws the comparison with multiple experiments, and distinguishes between literal and theoretical replication. In the first one cases are selected to predict similar results, and in the second one to produce contrasting results for predictable reasons. (Yin 1994: 46).

case contamination
When some of the cases that are studied are very easily interdependent, we run the risk of case contamination (Rosenthal/'t Hart 1994). Although several other authors (e.g. Swanborn 1995) consider the extent of the fear for case contamination an exaggeration,

they also stress the importance of a good strategy and of not over-stretching the generalization process.
With systems of land registration the risk is limited. No two countries have the exact same system of land registration, and even when coming from a common heritage, different changes are made in different countries over time.
The largest colonial power, the British Empire, already had different systems operating on the British Isles[61]. Many of the colonies got much better systems of deeds registration introduced than existed in England and Wales, and improvements were not introduced simultaneously all over the empire. Furthermore several colonies which were taken over from other colonizers in the course of history kept a strong influence from the previous colonizer (e.g. the Dutch-Roman law in Southern Africa and French based civil law on Mauritius). Within the French empire a system based on the Torrens system was introduced in several colonies, whereas France kept its improved deeds registration. With the fall of colonialism the differences have only grown. A special case deals with the Napoleonic Empire in the early 19th century. Much of Western and Southern Europe was under Napoleon's rule for at least a few years in the same period as Napoleon introduced his systematic cadastre. The effects of this can still be seen in those countries and many of their former colonies. A similar case can be found for the system of land registration of the late 19th century Austrian-Hungarian Empire. Traces of this system can still be found in most Central European countries, and have actually regained importance after the (re) introduction of the market economy in much of this region[62]. But even with the common heritage, differences can also easily be identified. This even holds for the former Czechoslovakia, which only separated into the Czech and Slovak Republics in 1992, where there are already noticeable differences.

[61] Scotland operates a very different system than England and Wales. Where the latter started to implement title registration from 1862 on (with a boost after 1925), Scotland has only started introducing it in 1980 and aims at having all counties open for first registration in 2003.

[62] The way in which its system developed in the countries which emerged when it dissolved is the topic of study of the *Arbeitsgemeinschaft zur Durchführung des Forschungsprojekts Grundbuch in Mittel- und Osteuropa* (ARGE Land Register) in Vienna.

5.2 Case Design

5.2.1 Research Design

A research design encompasses:
a. study's questions;
b. propositions;
c. unit(s) of analysis;
d. logic linking data to propositions;
e. criteria for interpretation (Yin 1994: 20).

Each of these parts will be elaborated here.

a. study's questions
The study's question is (§ 1.3.2):

> *How do the technical, legal, and organizational aspects and their interrelations affect the way a system of land registration is able to provide adequate legal security to owners and purchasers of real property within a given jurisdiction?*

More colloquially phrased one could say *What makes a land registration 'go round'?,* as the title of one of the author's papers reads (Zevenbergen 1995). To be able to answer this five research questions are used. The last two relate to the case study methodology and case study results (see D and E in § 1.3.2). Within each case studied the following four questions are asked (compare § 1.3.3):
- How are the legal, technical, and organizational aspects of land registration taken care of in each of the selected countries?
- What is the interrelation of these aspects in these countries?
- Does this give an effective functioning land registration to these countries?
- Which more general conclusions can be derived from this?

The case reports and the (main) results of the cases presented in chapter 6 are, however, not structured along the lines of these questions, as is explained in § 5.2.2 under 'reporting'.

b. propositions
The first proposition, which can be seen in the aforementioned research question, is that the technical, legal, and organizational aspects interrelate, and that it is through this interrelation that the system of land registration can supply the adequate legal protection. The second proposition, also to be seen in the research question, is that a system of land registration within one jurisdiction (country or part thereof where the governmental and legal system is uniform) operates the same throughout the jurisdiction, whereas it is by definition different between different jurisdictions (nevertheless in some jurisdictions several systems operate simultaneously, which not necessarily all extend to the whole territory, compare *Ghana*). Obviously this only holds to a certain extent, since many circumstances might differ between areas within a given jurisdiction. The distance to offices for getting approvals for instance differs, as does the level of development of the community and its economy. The third proposition consists of the provisional hypotheses. Based on existing knowledge of several systems of land registration and general literature several hypotheses on the

importance of and the interrelations between the three main groups of aspects were formulated. They are (Zevenbergen 1995: 177-178):

(1) When the organizational and technical aspects are well taken care of, weak legal aspects can be overcome.

This is based on the way the situation in the Netherlands, especially as it was before 1992, is perceived.

(2) When the technical and legal aspects are well taken care of, bad organizational aspects will still be a great problem.

This is a situation presumably to be seen in many countries. Especially in countries where lawyers run a purely descriptive land registry completely independent of (land) surveying activities, e.g. for the (fiscal) cadastre, like in many Roman law countries (South and West of Continental Europe, South America).

(3) When the legal and organizational aspects are well taken care of, bad technical aspects can be overcome.

Organizational	Technical	Legal	End Result
✓	✓	≈	acceptable
✓	≈	✓	acceptable
≈	✓	✓	problematic

Figure 5.1; Aspects and their interrelated effects

This seems to be the situation in many Anglo-Saxon and Commonwealth countries. No coherent cadastral mapping exists in most of these (except for England and Wales where coherent topographic mapping is used), and still the legal protection can regarded as well taken care of with the legally sound Torrens-system. Problems with this arise for the (governmental) tasks regarding land management (compare the effort that had to be put into establishing so-called Multi-Purpose Cadastre (or land information systems (LIS)) in such countries).

When these three hypothesis are combined, the following fourth hypothesis can be formulated.

(4) Whereas flaws in technical or legal aspects can be overcome when the other two aspects are well taken care of, flaws regarding organizational aspects will quickly render the land registration inadequate.

The hypotheses are depicted in Figure 5.1. They are in line with a review of World Bank supported land titling projects in 1980s that confirmed what most project implementors know “that the institutional dimension is a most or the most demanding aspect of titling projects.” (Holstein 1996: 4-5)

c. unit(s) of analysis
Land registration (in a broad sense, as described in chapter 4) within the country studied was chosen as the unit of analysis. The aim is to look at the system of land registration as a whole in each country. Nevertheless the focus with regard to the system of land registration in each case is mainly on the technical, legal, and organizational aspects thereof. Although it would give a completely different study altogether, it would have been possible to make each of the distinct aspects a unit of analysis, and to look for the array of solutions found in different countries to deal with them. That would, however, not be in line with the systems approach taken in this study and explained in chapter 4. It is the whole of the system of land registration in each country that is studied, only specifying the different aspects to limit and structure the project.
It is not necessary that the central unit of the model equals the unit of analysis of the case (Hutjes/Van Buuren 1992: 49). In some respects this is the situation in Ghana. The central unit of the model in this study is the 'system of land registration', but in Ghana they have started to introduce title registration, whereas during the case study, most of the country was still under deeds registration. One could argue that this constituted two systems of land registration, and that the case study should have been limited to one of them, or that they should have been counted as two separate cases. However, land registration in Ghana is seen as the case. Quite some relevant aspects and circumstances do not differ between the title and deeds registration, and most publications on the title registration start by discussing the deeds registration and its problems.

d. logic linking data to propositions
Systems of land registration can be described in a dynamic and static form (see Figure 4.8). Within the static form the model of the legal relation between persons and land (Figure 2.1) forms the base for the study. Owner, right and parcel all have to be clearly identified, and many of the characteristics within the distinct aspects deal with one of these identifiers. Different functions have to be performed in order to fulfil the goal(s) of a system of land registration. Each function can be performed through the undertaking of one or more tasks. Theoretically different (sets of) tasks can be used to perform the same function, but it is hard to clearly distinguish functions and tasks in real life. The aim in the case studies was to study for each function, which techniques are used to perform it ('technical'), which laws and regulations allow the function to be performed and within which parameters ('legal'), and which person, organization or combination performs the function ('organizational'). For almost each function there are technical, legal as well as organizational aspects relevant, which often influence each other. That could already be seen as interrelations between the different aspects, certainly if and when we can combine these findings for closely related functions, and ultimately the whole system of land registration.

e. criteria for interpretation
For each of the forementioned functions there are theoretical statements on their effectiveness and efficiency. Even more important are the opinions in a country to what level of satisfaction each function is performed and how this affects the whole system of land registration. A more quantitative approach would have been to determine so-called 'performance indicators' and establish values for each of those (see Steudler et al 1997). That road was not pursued. It is the author's opinion that 'performance indicators' can only be established based on a rather comprehensive conceptual model of systems of land registration. Creating such a model is an important goal of this study, and therefore the use of performance indicators would be a next step. *A priori* it is assumed that performance indicators are strongly influenced by social, cultural and especially economic circumstances

which are treated as part of the environment of the system of land registration here. Finally performance indicators could have used here as an additional measure, but it is assumed that in several situations a performance indicator might not point into the right direction. It might reveal the weakness of a chain, without indicating which link within that chain is to blame. Knowing about the weakness of a chain, without knowing which link is the cause, might lead to strengthening the wrong links or unnecessarily replacing the whole chain (compare *Ghana*). The first 'solution' will not help, and the second one is unnecessarily expensive.
Nevertheless qualitative remarks regarding the studied systems of land registration are made. Primarily this comes down to the level in which the so-called emergent attribute of "trustworthiness" is met (see § 4.1.2 and 4.1.4). Furthermore we can distinguish different features and criteria (see § 2.3.2). In the context of this study the most fundamental ones can be seen in the question whether a conveyance of landed property can be done safely, quickly and not too expensive (Zevenbergen 1995: 175). Or to use the words of the Bogor Declaration, "... the success of a cadastre is not dependent on its legal and technical sophistication, but whether it protects land rights adequately and permits those rights to be traded (where appropriate) efficiently, simply, quickly, securely and at affordable cost." (UN 1996b: 8)

5.2.2 Case Protocol

Another important part of the research design is the case study protocol, which aims at the single case level. Such a protocol avoids slipping away from the original intentions in the 'reality' of an individual case. It also makes it easier to replicate the research; a prominent feature of scientific research.

The most important items to be covered by the case study protocol are
- background of the case study;
- selection of cases;
- data collection process; and
- outline of the case reports (compare Hutjes/Van Buuren 1992: 94).

Each of these items will be elaborated here.

background of the case study
This includes the reason behind the study, the background of the study and the specific questions asked within the study. Much has been said about this before (in § 1.3, 4.3 and 5.2.1). The case study is set up as a multiple case study. The system of land registration as a whole is studied in four different countries. The studies are done with the main focus on the technical, legal, and organizational aspects and their interrelations. The systems are studied from the whole to the parts (systems approach), along the line goal-function-task (see § 4.1.2).

selection of cases
There is a generally shared notion that "no two systems of land registration are the same", and that there are many things that can be different (see chapters 2 and 3). Therefore, it will not be possible to find cases suited for literal replication, and –on the other hand– the risk of case contamination will be very small. As a selection strategy, the strategy of the maximum variance of cases was chosen. This included variety in the phase development of the countries and their systems of land registration. (compare § 5.1.4)

Early on it was decided that four cases would be studied. It was assumed that with four strongly differing cases enough data would be collected to verify the hypotheses and to base a conceptual model on. The latter especially since some data on many more countries are available through literature and *ad hoc* visits made on all kinds of occasions (see Annex C). The data on those other countries are not collected in the same systematically way as are the cases, but still contribute to the author's general understanding[63].
In order to come to the choice of four cases that differed enough, five characteristics based on the preliminary ideas were developed. Each characteristic should be present in at least one case, and absent in at least one other case. After their listing, the reasons for using these characteristics will be described. The characteristics are:

- strong influence of customary law;
- 'Grundbuch'-like type of registration;
- (remnants of) English land law;
- government guaranteed parcel boundaries;
- completely independent land registry and cadastre (Zevenbergen 1995: 177).

strong influence of customary law
It is often reported that the cadastral and land registration systems presently used are directed towards individual ownership, and are not well tailored for different land tenure arrangements. Especially in rural areas of developing countries many communities exist that are regulated by their own customary law. This includes customary land tenure, which often differs from the statutory land tenure in the same country, and usually contains a multitude of overlapping rights vested in different groups and/or individuals. This situation is present in many countries where land registration or titling projects are being undertaken, and forms an important reason for criticism towards titling projects.

'Grundbuch'-like type of registration
As explained at length in § 3.1 the most used theoretical classification of systems of land registration distinguishes between deeds and title registration. At least one country from both types should be included. And, since in the easiest available, English, literature on title registration the focus is on the English and Torrens types of title registration, the study of a country from the third type of title registration, the Central European land book system (or in German *Grundbuch*) helps widen the scope.

(remnants of) English land law
As described earlier on almost half of the world has been part of the British Empire at some time in history. Common law, and the later written English land law, have influenced many jurisdictions. Coming from a Roman Law environment, it is important to study English land law, or at least remnants thereof, to reach maximum variance.

government guaranteed parcel boundaries
As explained in § 3.2.4 boundaries are often classified as fixed or general boundaries. Although sometimes misunderstood, the difference is mainly a legal question of the status of the boundary once determined, and especially the procedure for determining the boundary. Theoretically an extremely formal, fixed boundary could be guaranteed by the State, as is the title to a real estate in a full fledged title registration system. Obviously

[63] Especially strong were the contributions from two countries in transition where the author worked extensively as a consultant (Moldova (8 visits between 1994 and 1997) and Bulgaria (7 visits between 1998 and 2000)).

guaranteed boundaries would lead to high standards for the legal and (land) surveying work related to boundary determination. Very few countries are reported to extend their guarantees to include the (exact) boundaries. If it exists, a study of a country which does, would contribute to reach maximum variance.

completely independent land registry and cadastre
As explained in § 3.2.6 different organizational structures are used with regard to systems of land registration. One of the most important differences is the question if the more legal functions and the (land) surveying and mapping functions are performed by the same organization, or by separate organizations. In the latter case these are regarded as the land registries and either cadastres or land survey departments. To reach maximum variance countries with both the one and multi organizational approach should be include.

	the Netherlands	Indonesia	Austria	Ghana
customary law		√		√
Grundbuch			√	
(remnants of) English land law				√
guaranteed boundaries			√	
combined registry/cadastre	√	√		

Figure 5.2; Table of desired characteristics and chosen countries

Numerous combinations of countries would be possible that include at least one with and without each of the five characteristics described above. But determining for each characteristic if it is present or absent in a country would be quite difficult based on the generally available literature alone. For quite some countries reports and other grey literature[64] that might help to determine this might exist, but one usually comes across these by accident. Therefore the selection process was based partly on the expertise gained through literature, and partly through previous visits to the country by the author or through extensive contact with persons who had recently visited the countries. This led to the following short list of countries: Austria, Czech Republic, Ghana, Honduras, Indonesia, the Netherlands and the Canadian province of Ontario[65] (Zevenbergen 1995: 177).

[64] For an explanation of the word grey literature see § 1.3.3.

[65] In 1990 the author visited the Austrian Cadastre (during a student study trip); in 1995 professor Bogaerts of TU Delft was working on an evaluation of the Czech Cadastre; in 1995 the author visited the Ghanaian Survey Department during a mission to identify fields of possible cooperation between the Departments of Geodetic Engineering at UST Kumasi and TU Delft; in 1994 the author had extensive e-mail contact regarding a land registration project in Honduras; in 1995 the Geodetic Engineering departments from TU Delft and UGM Yogyakarta and several other organizations were considering

Dependent on the availability of (grey) literature at the Delft University of Technology (TU Delft), the author's mastering the language, and, most important, a positive reaction from enough involved agencies within the country, the list was narrowed down to the Netherlands, Indonesia, Austria, and Ghana. In Figure 5.2 you can see how the previously introduced characteristics relate to the countries.

data collection
With regard to data collection there are three aspects which help to come to a rigorous case study:
- use multiple sources of evidence
- create a case study database
- maintain a chain of evidence (Yin 1994: 79).

Yin identifies six methods of data collection often used in case study research. They are:
- documentation
- archival records
- interviews
- direct observation
- participant-observation
- physical artifacts (Yin 1994: 80)

In this case study the emphasis lays on 'documentation' and 'interviews', as explained below.

The data collection took place from the Summer of 1995 till the Spring of 1997. Of course later developments took place in all cases till the moment this study is completed. That is, however, not important in the context of this study. It is important to study a whole system of land registration at a certain moment, getting an understanding of how the different functions are performed there and which aspects are involved and how they interrelate. The study of the whole system of land registration at a different time in one of the countries would have been as useful as a case, as would have been the study of a different country. The aim of the case study is not to create a perfect, up-to-date description of each country, but to gather coherent information on the wholeness and interrelations of a real system.

In the Summer and Fall of 1995 the system of land registration in the Netherlands was (further) studied. Firstly by reading more literature, and secondly by spending several days at a notary´s office, the registry department of a *Kadaster* office and the (land) survey department of the same *Kadaster* office (about two days in the field, mainly related to subdivisions).
In the Spring of 1996 the author worked 10 weeks in Indonesia, mostly in Yogyakarta, where he got an office and computer at the Geodetic Department of Universitas Gadjah Mada (UGM). He visited several related organizations in the area, and observed a subdivision in the field. He also made two trips to Jakarta, where he made some more visits, including one to the head office of the National Land Agency (BPN).

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co-operation in the field of land registration; as a student and a staff member the author had visited the Dutch Agency for Cadastre and Public Registers several times, and his education (both as a surveyor and as a lawyer) had been based primarily on the Dutch situation; in 1994 the author had closely worked with professor McGrath from Queens University in Ontario, Canada.

In the Fall of 1996 he worked 2 weeks in total in Austria. Firstly a few days in Vienna during which he visited most involved organizations. Later he visited Innsbruck for a week, where he visited the provincial offices of several organizations, and participated in the field during subdivision.
In the Spring of 1997 he worked 6 weeks in Ghana. The first week was spent in Accra, the capital, with visits to the most involved organizations. Then he spent three weeks in Kumasi, at the University of Science and Technology, where he got an office at the Land Administration Research Centre (LARC). He studied many documents in their archives and visited several university departments and regional offices of relevant organizations. After a holiday, he spent the last two weeks again in Accra, where he visited the most relevant organizations again, spent a day in the field putting in boundary markers in a new development area, and located some more documents.

Figure 5.3; Land Administration Research Centre at the campus of UST, Kumasi (Ghana)

In this case study great emphasize is put on the first method, documentation. Many books, reports and papers on parts of the system of land registration exist in every country. Some of these treat the subject from different angles, so even within this one method multiple sources of evidence are included. Archival records were only important as far as the number of parcels, owners, court procedures regarding landed property etc. In each country several interviews were undertaken with some (key) officials of the relevant organizations. The intended practical periods at the most relevant organizations, did not include a lot of direct observations on how the work is actually been carried out. He did spent about a day in the field in each country, observing, or even assisting, in the undertaking of a subdivision. The time he spent in offices of involved agencies and companies was mainly used to talk with the employees actually doing the work. Participant-observation is not really used, although he occasionally undertook some small activity himself (under direct guidance of course). In the field he did see how parcel boundaries are present in the terrain (physical artifacts), but this was not undertaken in a systematic way. Especially with the interviews there is the risk of elite bias (Hutjes/Van Buuren 1992: 60). This was experienced to some extent, but during the practical visits, especially in the field, he also spoke with more rank-and-file types of people. The greatest bias that occurred

during these case studies, was that the emphasis was on persons who work within (parts of) the systems of land registration. The only 'independent' persons talked to were persons working at universities. He did not manage to locate and talk with the 'clients' or persons representing them.
Most of the information came from the studying of documentation, esp. with regard to the general framework, which was completed by interviews, direct observation and physical artifacts. The author can easily read the Dutch, English and German languages, and had no problems with getting enough information both at the framework level and at the detail level in the Netherlands, Ghana and Austria. He can not read the Indonesian language, and therefore he had to rely more on oral sources, from relatively high officials, in getting enough detailed information in Indonesia.

The data collection methods used are so diverse that we can be sure that there are multiple sources of evidence. In addition to that the findings were checked in three ways. Some of the key contacts in the country were asked to comment on them; it was compared with any other 'independent' description of the situation in this country; and the results were presented to some international experts. The first method is considered the most important one, but unfortunately not a lot of response on the draft case reports from Indonesia and Ghana was received.

reporting
With a multiple case study research design there are two levels of reporting. Firstly, there is the overall report of the study as a whole. Yin points out that it is important to start early with 'parts' of this report (Yin 1994: 128). An early start was made with some parts of chapter 1, 2 and 3, and a lot of time was spent on drafts of chapter 4 and 5.
Secondly, there are the case reports of the cases studied in the research project itself. Before undertaking the actual case studies, a preset structure (an outline) of the case report was made. Doing this is an important part of the protocol approach. During the data collection phase several documents were written. The most important ones were:

- listing of all activities undertaken (documents read, people met, visits made);
- notes on meetings and visits (and summaries of some documents)[66]
- ongoing description of the system of land registration, which forced to keep putting the data into perspective.

At the end of the data collection phase a first draft of the case report was written based on all the information available and according to a preset structure. This allowed for the identification of some gaps and, where possible, for filling them. Based on this, overheads for a presentation were prepared, but in most cases the counterparts had unfortunately not planned a meeting to present them.
After the data collection phase, the case report was further improved and refined. The resulting draft case reports were then sent back to the key contacts in the countries, including persons working in relevant organizations and academics. This review process of draft case studies is also an important part of enhancing the construct validity of case study research. Unfortunately there was only limited response on this, especially from *Indonesia* and *Ghana*. The responses that were received and their influence on the case reports can be found in the paragraph 'Comments and Update' of the final version of the case reports.

[66] This forms an important part of the case study database.

The results of each case are laid down in an extensive case report, containing about 40 pages[67], which consists of four parts:
- description;
- literature studied;
- persons interviewed.
- comments and update.

The first, and substantive, part contains five chapters:
- facts and figures
- technical aspects
- legal aspects
- organizational aspects[68]
- preliminary conclusions.

The first and last chapter are relatively short, and the bulk of the information is in the three other chapters. The structure of those chapters was prepared beforehand, in accordance with the main focus of this study being on the technical, legal, and organizational aspects (see § 1.1.3). Within each of the three types of aspects, topics have been identified to be used as headers for the paragraphs of the case reports. It is not easy to find a topic that only relates to one set of aspects, but at least most topics can be said to have a focus from one of those. It concerns:

technical aspects
- boundary determination
- data storage
- GIS
- digital networks

legal aspects
- land tenure (legislation)
- registration legislation
- general civil law
- information law

organizational aspects
- institutional
- registrar - cadastre
- government organization / private practitioners
- governmental or licensed surveyor
- role of notary
- daily practice - 'law in books'
- costs for users[69]

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[67] This holds for the Netherlands, whereas Indonesia and Austria were slightly shorter and Ghana larger (due to two systems operating in the country).

[68] Originally an additional chapter called ‘some financial aspects’ was included, but since limited information relating to that surfaced, a paragraph ‘costs for users’ is added under ‘organizational aspects’ instead.

[69] Originally this was part of a separate heading ‘financial aspects (some)’.

Due to their size and almost purely informative (and rather detailed) character these case reports are not included in this study themselves[70]. In chapter 6 the main points of each case are presented in three ways. Firstly, the main points of each case are shortly presented in a functional description (originally prepared for Zevenbergen 1998c). To this some additional information along the lines of the just presented structure is added. Secondly, each case is represented through a completed table of tasks and questions as presented in § 4.3.4 (Table 4.11).Thirdly, a more concluding paragraph is given in which the system of land registration of the specific country is analyzed (originally prepared for the 'preliminary conclusions' paragraph in the case reports).
At the overall level a comparison and cross case analysis are included as well.

[70] They will be placed in the departmental collection of the TU Delft Library.

5.3 Concluding Remarks

The case study method is an appropriate methodology for collecting empirical data in this study. The systems approach introduced in chapter 4 already points in that direction. Use of the case study methodology has also been recommended for cadastral reform and development.
This case study is a multiple case study, consisting of four cases selected on the basis of maximum variance. The cases should not be seen as sampling units, and statistical generalization (as used with surveys) is out of the question. The results can be combined through what is called analytical or theoretical generalization. You generalize to theoretical propositions and not to populations or universes. Neglecting the difference with statistical generalization is one of the fatal errors regularly made when looking at case studies and their results.
Doing a case study right is not easy, and Yin especially gives many useful guidelines to work by. It is especially important to make your choices as early and as consciously as possible. A case is often so interesting and data rich, that it is easy to 'drown' in it and lose sight of the main objective of the whole study. On the other hand the case study method makes it much easier for unexpected information to be found by the researcher, and especially for interrelations to be visible.

The selection of cases in this case study aimed at maximum variance of the four cases to be studied. This was put in effect by defining five characteristics which should be present in at least one, and absent in at least one other case. Within these confinements, the final choice was made on the practical basis of cooperative contacts and base documents at TU Delft. The cases are: the Netherlands, Indonesia, Austria and Ghana.

To support doing a good case study, a case protocol has to be made before the actual cases are undertaken. Although the importance of that is especially great when more than one researcher will be involved, a case protocol was made for this study as well. An important element is the structure of the case reports, which was structured along the lines of the technical, legal, and organizational aspects. These reports each measure around 40 pages, and are not included in this study. The main points from them can be found in the next chapter.

6 CASE STUDY RESULTS

In chapter 5 the design of the case study is described. In this chapter the results of the case study are presented in two ways. The main points of each of the cases are presented in § 6.1-6.4 and the overall results of the case study are presented in § 6.5. The former are presented in three ways as explained at the end of § 5.2.2. The latter take the form of a comparison of the cases and a cross case analysis.

One should bear in mind that the aim of the case study is not to come to an as good as possible and up-to-date description of each of the cases, the systems of land registration in the four countries studied. It is to have empirical material of the system of land registration as a whole in each country, with emphasis on the technical, legal, and organizational aspects and their interrelations. In order to get a general picture from the four cases together, there has to be a framework to fit this into, as was presented in the chapters 4 and 5. Nevertheless each case has its own story to tell, as can be seen in the differences in emphasis on certain points in the descriptions of each case.

6.1 The Netherlands (1995)[71]

6.1.1 Functional Description

overview
All land has been brought under the system of land registration. This system consists of three information collections. These are the archive of deeds ('public registers'), a parcel-based property register ('cadastral register') and an index map ('cadastral maps'). All three are kept and maintained by the semi-privatized Agency for Cadastre and Public Registers ('Cadastre').

procedures
The transfer of property rights requires a notarial deed which has to be registered in the public registers. The notaries are organized as private practitioners with an extensive professional liability. The registrar has to register any notarial deed in the public registers, as long as it meets a few formal requirements, without checking whether the seller was the proprietor or whether there are any other problems. The same registrar, however, can refuse to update the cadastral register accordingly when he or she is not satisfied that the –registered– deed indeed has the intended legal effect. Due to the skills of and the cooperation between the notaries and the registrars the quality of the information in the cadastral register is very high, and it functions as a property register, although it is not backed by statutory guarantees and only by limited governmental indemnities.

identifiers
Each property is identified by a unique parcel number, which refers to a parcel on the cadastral map. It is mandatory to include this identifier in any deed relating to this property. The surveyors who work at the Cadastre undertake all boundary surveys, which only have a limited legal meaning. Boundaries are often not monumented, but usually their approximate position can be seen from physical features. In the case of a subdivision, one usually transfers a 'part-parcel' first, and postpones the subdivision survey for several months, until there are more surveys to be done in the same area. The reconstruction of boundaries in the field is not based on the cadastral map (with a relatively mediocre accuracy), but based on the original survey documents, which are kept as a fourth information collection ('reconstruction archive').

use of ICT
The public registers are still kept in an analogue form (paper or microfilm). The notaries and the Cadastre are, however, working on a system whereby the notary would register his or her deeds electronically at the Cadastre. The cadastral register has been kept digitally since the early 1990s, and all notaries and most local authorities, real estate agents and banks have on-line access to it. The digitizing of the cadastral maps was finished in 1997.

[71] For a full description see my Report on the case the Netherlands, Delft, May 1997/June 2002. The draft case report was also used as an important base for the report on the Netherlands by Prof.Dr. Theo Bogaerts as part of the Review of Planning Options, Cadastral System in Poland, Comparative Analysis of Cadastral Systems in Selected Countries, dated December 1997.

participants
The Dutch system of land registration is run by the Agency for Cadastre and Public Registers and the notaries. The Cadastre was semi-privatized in 1994 and now functions as a self-administering state body on a successful cost-recovery basis. There are 15 regional offices and about 2000 staff. There are 1250 notaries, working as private practitioners. They are appointed by the Crown when they have the right education and experience. They are united in a professional organization, which maintains and controls the quality of their work.

type of system
In the traditional classifications the Dutch system is a well improved 'deeds registration', combined with a cadastre in the Napoleonic sense. The boundaries are surveyed as indicated in the field by the neighbors (like with 'fixed boundaries'). But this is usually done months after the 'part-parcels' have been legally created. It is unusual to erect boundary markers, and in general it is assumed that he boundaries coincide with topographic features (like with 'general boundaries'). Parcels are depicted on index maps (a graphic cadastre). There are no title plans. The individual boundary survey sketches, however, may play an important role in reconstructing the 'cadastral boundary' in case of dispute (but when it comes to court this has only a limited meaning). The (supposed) owner does not get a 'title certificate', but he or she does get a copy of the registered transfer deed, which is stamped by the Cadastre.

practice
The Dutch system works well in practice, even though it has some theoretical shortcomings. Sensible administration has led to reliable information. It is doubtless supporting an active land market, with an acceptable level of legal security. There is a rather relaxed attitude towards the precise position of the boundaries. Boundary disputes occur rarely, but when they do there is little formal evidence to solve them.

6.1.2 Aspect Based Description

technical aspects
The national geodetic framework is well established and maintained. The cadastral surveys are done in relation to this. Although boundaries are often not monumented, many of them are visible in the terrain. The (graphical) precision of the cadastral maps is 28 cm for urban and 56 cm for rural areas, but for reconstruction in most cases the much more precise survey sketches can be used. The quality of the existing (digital) cadastral maps is very diverse. The survey work is performed with modern equipment, although by 1995 GPS was still used only for the national geodetic framework. All subdivision surveys are performed by surveyors working at the Cadastre, who also update the cadastral maps. In 1995 75% of the cadastral maps had been digitized.
The cadastral register is fully digital, and can be accessed on-line by notaries, municipalities, real estate agents, banks, etc. Almost 10 million information requests per year are made this way. The cadastral register also provides a data set that is often used by different authorities and some companies in many GIS applications.

legal aspects
The legal base for most of the system of land tenure is the Civil Code (originally from 1838, but modernized in 1992). The real rights listed in it are ownership, long lease (*erfpacht*), superficio (*opstal*), condominium (*appartementsrecht*), easements, and usufruct (three

forms), as well as mortgages (*hypotheek*).
The legal base for the system of land registration is found in the Civil Code and –since 1992– in the Law on the cadastre and the public registers. Several by-laws regulate the exact operations.
Transfer of a real right consists of two phases. The first phase deals with the transaction as such ('title'), the second phase with the publicly visible activity ('means of acquiring'). The latter consists of the drafting and signing of the notarial deed of transfer and the recording thereof in the appropriate public register. Legally the title changes hands the moment the deed is offered for recordation (rather unusual under a deeds system). If such a deed transfers a property which differs from an existing parcel, the Cadastre will –after recordation– arrange for its surveyors to inquire about the boundary, to survey the boundary, to update the cadastral map and to replace the temporary 'sub-numbers' with new cadastral numbers.
The causal doctrine is applied in the Netherlands, which means that problems in the 'title' are not repaired by recordation, although *bona fide* third parties can to a large extent rely on what is and is not present in the public registers.
The legislation on privacy does not apply to the system of land registration as such. All information in it is public, and any type of search is allowed. A more strict policy is applied to queries leading to certain types of selections.

organizational aspects
Dutch land registration involves the Cadastre and the notaries.
The 15 regional cadastral offices keep and maintain the public registers, the cadastral register and the cadastral maps (including the necessary surveys). Being a self-administering state body gives it great freedom in the internal and financial set up. Nevertheless it operates as a law-based monopoly, and the fees are set by government regulations (on a cost-recovery base). ICT plays an increasing role in the operations, but the extremely ambitious plan 'IT 2000', has been partly suspended.
The notaries not only legalize the deeds, they also check to see if all prerequisites for the intended transfer are in order. They will look at the underlying sales contract with a legal eye, they will check the cadastral register and the previous deed, and often several other registers as well (e.g. the public registers, the company register and the marriage register) and all the money will go through them. They have an 'active care duty' in all of this, and are liable for mistakes (they have mandatory indemnity insurance). In 1995 the number of notaries was still set by the government at approximately 1250, although many of them have several highly qualified staff (including candidate notaries who after a year can replace the notary in his or her absence). There is criticism of the high notarial fees and the lack of competition.
The cooperation between Cadastre and notaries is very good, and usually an occasional mishap by one is (formally or informally) reported by the other, and quickly solved.

The daily practice seems to surpass what one might expect from the 'law in books'. Several of the (theoretical) 'negative' aspects of the system, are rarely –if ever– experienced in practice. Occasionally the description in the deed of a subdivision is rather vague, causing problems during the inquiry and survey in the field. This can be aggravated in cases where this field visit takes place long after the deed was signed (although the severe backlogs in several offices have been solved). But even in such cases notary and Cadastre usually manage to find a workable solution.

6.1.3 Developments

After the case study in 1995, the revised Notary Law was enacted. The number of notaries is no longer set by the government, and any candidate notary with six years experience can now make a business plan to become a notary. If the plan is acceptable, he or she will be appointed a notary. The fees are no longer fixed, but should (still) be within a prescribed range. Although this allows for more competition, so far only a few 'price fighting' notaries are active.
The Cadastre has finished digitizing the cadastral maps, and has created the (technical) infrastructure which allows notaries to submit the deeds of transfer electronically. Due to general developments in E-government and E-business (incl. the electronic signature), the necessary changes to the law have been stalled. The Cadastre has suspended the redesign of its databases.

6.1.4 Task Table

	done	who	mandatory	legal effect	consequence of mistake	indemnified
negotiating	yes	seller, purchaser (r-e agent)	yes	legal base for transfer	no transfer, but 3rd parties protected	usually
advising	yes	notary	yes	liability for the notary	no transfer, but 3rd parties protected	yes
legalizing	yes	notary	yes	prerequisite for registration	no transfer, but 3rd parties protected	yes
surveying	yes	Cadastre	only after subdivision	no direct effect	liability for Cadastre	usually
mapping	yes	Cadastre	only after subdivision	no direct effect	liability for Cadastre	usually
indexing	yes	Cadastre	yes	prerequisite for registration	no transfer, but 3rd parties protected	yes
mapping	yes	Cadastre	yes	no direct effect	liability for Cadastre	yes
checking	no					
storing	yes	Cadastre	yes	transfer on moment of ‘storing’	no transfer, but 3rd parties protected	yes
indexing	yes	Cadastre	yes	no direct effect	liability for Cadastre	yes
registering	yes	Cadastre	yes	transfer shown to world	liability for Cadastre	usually
issuing	no					

Figure 6.1, Tasks and questions of the Dutch system of land registration

6.1.5 Concluding Summary

It can be said that in the Netherlands an effective land market has operated for a long time. This land market is being supported by a sensible system of land registration. The main players in that system, the Cadastre and the notaries, have grown into their present role, and have regularly introduced new techniques[72]. A great advantage during the development of the present situation has been the fact that the public register and the cadastral registration were part of the same organization. This avoided a situation in which double work would be done, in which the cadastral registration would lag behind or in which it would be unclear which piece of land a deed refers to.
Due to good administrative management within both the cadastral and notarial offices, and the willingness to comment on mistakes found in the work of each other and act upon that, the system reached a much higher level than would be expected on the basis of its laws and regulations. Especially before 1992 when there were virtually no rules governing the operation of the cadastral registration and maps, and the rules for the public registers were those of a 'negative system', the situation in practice rose far above what one would expect from a 'negative' deeds registration. Without breaking any legal stipulations and by relying to a large extent on each others' work, the notaries and the Cadastre maintain this situation, to the complete satisfaction of owner and purchaser. It could be deemed desirable to reflect this more clearly in the laws, but even without that an adequate conveyancing system already exists in practice within the Netherlands.
When asked in the 1950s if it was necessary to introduce a 'positive system' or title registration, the Dutch parliament decided not to. It held the opinion that the system functioned so well in practice, that the law did not need to be amended extensively. In other words, the –theoretical– deeds registration has developed so much over time, that it became –in practice– an extremely improved registration of deeds, which functions so well that it is a waste of resources to transform it into a title registration. Snijders (1994: 90) even says that a real check of every deed (normally found in a title registration) would greatly burden the legal practice, and would be unevenly complicated compared to its interest.
With regard to the subdivisions the general idea deviates quite a lot from most other countries. The Dutch accept the transfer of parts of parcels (before the subdivision is surveyed). The boundary will be described in the deed, often in words, sometimes through a sketch. Several months may pass between transfer of the part and actual surveying (in the recent past sometimes even a few years). This allows the surveyors to operate more efficiently and has kept the additional fee for a transfer requiring a survey very low, as compared to countries where one has to hire a licensed surveyor to do a survey before the transfer. And in most cases the parties know and agree on where their boundary is, and this agrees with what the deed has said. Occasionally the parties do not agree, or there is a discrepancy with what the deed shows and some problems may arise. Nevertheless, only in very few cases do people use the more expensive alternative of having the parts surveyed before the transfer.

There are a few, relatively unimportant comments to make on the situation in 1995. With regard to the Cadastre, this includes the risks of operating too much as a commercial

[72] Before 1947 the staff of the Cadastre copied every deed that was presented to the Cadastre by hand in the books of the public registers. Since then the notary has to supply the Cadastre with a (mechanically reproduced) copy in addition to the original which the notary gets back (Law of 28 February 1947, Stb. H.66).

enterprise. A further reduction of the staff with 700 people and the 'black box' syndrome with more and more of the system being encompassed within computers may drain a lot of knowledge from the organization. With regard to the notaries the risks of operation as commercial enterprises already exists to some extent. Some people (including the government) think the notaries should become more commercial, others think that the limit has been reached (or already crossed) if one wants to retain their special, independent and impartial position. It is clear that their fees should be seriously reconsidered. With regard to the government reduction of the transfer tax should be considered.

The main lesson to be learned from the Netherlands by other countries seems to be that the system has improved itself through time, mainly by close cooperation between cadastre, public registers and notaries and by good administration, including regular updating of the law and regulations (usually more a codification, than a modification). In many countries where the system is functioning badly, they try to force through improvements by laws or regulations, notwithstanding lack of cooperation between cadastre, public registers, notaries and/or surveyors and lack of expertise and material resources within these organizations. But in the Dutch case evolution was more successful than revolution.
Another lesson could be that it is not sensible to strive for 100%-solutions, not even in the field of land registration. In the information sector the 80-20 principle is often used, meaning that the first 80% of the problem can be solved with only 20% of the total costs, solving the last 20% of a problem, however, requires 80% of the total costs. It is clear that a system of land registration needs to be more reliable than 80%, but legislation and procedures which try to anticipate every conceivable scenario tend to be time and money consuming, bureaucratic and inflexible. Even where it concerns legal security one has to make a cost-benefit analysis. It is better to allow for an occasional mishap (to run some small risk) and create a compensation system for it, than to drown every case in an elaborate procedure and find out that many people are eloping your system.

6.2 Indonesia (1996)[73]

6.2.1 Functional Description

overview
About 30% of the non-forest land has been brought under the system of land registration (being 9% of the total area). This system consists of three or four information collections. These are always the property register for each registered right ('land book'), the survey plan register ('survey letter register') and the archive of deeds. In the areas under systematic registration it also includes an index map ('cadastral (base) map'). All three or four are kept and maintained by the National Land Agency of the Ministry of Lands. In addition to this system there are some areas where the local authorities maintain (tax) registers and sketches.

procedures
According to the law the transfer of property rights requires an official deed which has to be registered in the land book. The deeds can only be prepared by 'land deeds officials' (PPAT's), in practice usually a head of sub-district (*camat*) or a notary. They perform their PPAT-tasks as private practitioners (the fees are personal income, but so far they have little professional liability). Before they can prepare a deed, they need to get the seller's title certificate (copy of the land book entry and of the survey letter) and usually some land control approvals. The deed then has to be presented to the Land Office, who will check it. If the Land Office is satisfied, the land book (and the other registers) will be updated and the new owner will receive the updated title certificate.
In case of land that has not been registered yet (either through systematic or sporadic registration), the law prescribes sporadic registration upon transfer. This provision, however, is often not abided by, and the courts have sanctioned this practice. Even in cases of registered land, the courts have not denounced non-registered transfers, which do occur regularly.

identifiers
A registered property is always identified with the land book entry number and the number of the mandatory survey letter. Where an index map of the area exists, the depicted properties have parcel numbers as well, but the previous mentioned numbers are also shown on the map. So far, all boundary surveys are undertaken by the surveyors who work at the National Land Agency (BPN). The use of private (licensed) surveyors has been initiated for systematic registration projects. Although the boundaries are monumented, it is often hard to retrace sporadically registered parcels. The surveys are usually done through 'free mapping', without any connection to a triangulation. This has led to the issuance of 'double certificates', whereby two titles apply (partially) to the same piece of land. In case of a subdivision the new boundary (or even both new parcels if there is no index map) will be surveyed by the surveyors of the National Land Agency after the necessary approvals have been received, but before the transfer deed is formalized by the land deeds official.

[73] For a full description see the 'Report on the case Indonesia', Delft/Yogyakarta, August 1996/January 2002.

use of ICT
All registers and maps are still kept in an analogue form, although computers have been introduced as part of several pilot projects.

participants
The Indonesian system of land registration is run by the National Land Agency (BPN) and the land deeds officials. The National Land Agency is tied strongly to the government, since its director also holds the title of Minister of Lands. The Agency has 27 provincial and 301 district offices (Land Offices) and employs 26,000 staff. Only a quarter is involved in land registration, whereas the rest deals with land grants and land (use) control. The land deeds officials work as private practitioners. They are appointed by the Minister of Lands, after taking a special examination. In practice the function is performed by heads of sub-district and notaries.

Figure 6.2; Provincial BPN-office ('Kanwil') in Yogyakarta

type of system
In the traditional classifications the Indonesian system is regularly referred to as a modified Torrens system. Parcels are monumented and the survey results in a title plan ('survey letter'). This title plan and a copy of the entry in the land book constitute the title certificate, which is issued to the (supposed) owner. This certificate serves as a strong evidence of title, but it does not constitute an indefeasible title. Therefore others refer to the Indonesian system as a 'negative system'. In practice there are examples of the hand-over of the certificate itself being used to transfer land, without making an official deed and having it registered.

practice
Although the Indonesian system looks quite decent at first sight, the practice is rather different. In a decreasing amount of traditional, close-knit communities, there exists internal security of tenure through customary (*Adat*) law (de Haas-Engel 1993: 9) and without the described system of land registration. In an increasing amount of areas communities have changed, or are about to change, into more heterogeneous societies. Here the lack of written documentation regarding land rights is causing many problems. Nevertheless so far

people in such areas have not had recourse to this in the system of land registration. The Indonesian government, with assistance from the World Bank and Australia, has embarked on an ambitious project to improve this; the Land Administration Project. But so far the project focuses mainly on Java and urban areas elsewhere and the regulations lack provisions for the registration of certain, communal customary (*Adat*) rights, which can still be found in numerous other areas.

6.2.2 Aspect Based Description

technical aspects
In the case of 1996 Indonesia there was no digital data storage, use of GIS or digital networks with regard to land registration. Therefore only 'boundary determination' needs to be discussed here.

The national geodetic framework is not dense enough to be used for land registration tasks. In case of systematic registration a local reference network will be set up, to which the measurements are connected. If such a network does not exist in an area when an application for a sporadic registration comes in, the measurements are now connected to hard topography, but before 'floating' parcel-plans were made. If there is no photo-map or other base map of an area, there is no certainty that a sporadically registered parcel will not overlap with another sporadically registered parcel. Boundaries of registered parcels have to be monumented by markers supplied by the National Land Agency. The requirements for accuracy are derived from the scale of the map and the area of the parcel, and are in the order of 2% of the area. Both surveying and mapping are still undertaken with 'traditional' techniques. GPS is being introduced to densify the national reference network, in order to bring the cadastral maps into this system. Mapping is still done by the staff of the National Land Agency, but the involvement of private licensed surveyors is being promoted.

legal aspects
In the case of 1996 Indonesia information law and general civil law have virtually no bearing on land registration. The (written) legal base for both the system of land tenure and land registration is found in the Basic Agrarian Law (No. 5/1960), which is as much a policy document as a law. In general the law acknowledges –unstated– principles of *Adat* law, unless these contradict the 'national interests'. The law pays little attention to the diversity of *Adat* throughout the country and aims at unification and centralization of the land law. The framework set by the law needs numerous regulations to color in all kinds of legal and administrative provisions. Several of these have never been enacted, and others are not always well coordinated. In 1996 land registration is dealt with in Government Regulation No. 10/1961. This regulation has some weaknesses, but the main problems lie in the implementation in practice. The necessity for mandatory registration to realize a working system is clearly expressed in the elucidation of the law. However, the Supreme Court, following *Adat* principles, holds that rights are transferred upon payment in front of witnesses, and that registration has merely an administrative character. Therefore, informal transfers still take place, even of already registered land. Sometimes the title certificate as such is handed over as 'proof' of the transfer.
Further complications can be found in so-called forestry areas. These areas, covering about 70% of the territory, are not covered by the Basic Agrarian Law (BAL). In 1996 the relevant legislation (Basic Forestry Law No. 5/1967) focuses on the timber industry, and by and large ignores the *Adat* rights of traditional communities who live near, of, or in the

forest. The boundaries between the two basic laws are often unclear, and surely outdated. It is even reported that 40-60 million people live in areas which are officially designated forest areas.

organizational aspects
Land registration involves the National Land Agency and the land deeds officials (PPAT). All tasks concerning the registration as such are performed by one of the 301 local offices of National Land Agency, called Land Offices. This includes keeping the deeds, updating the Land Book, issuing or updating the title certificates, and cadastral surveying and mapping. It functions as a combined land registry and cadastre. Several other land administration activities are also performed by these Land Offices, like land use planning and land reform. Some of these activities are intertwined in the procedures of transfer and especially in of subdivision. Whereas land use planning concentrates on the present land use, the future land use should be considered a part of spatial planning, which is the responsibility of another ministry and regional authorities. In practice the two types of planning are not clearly separated and the implementation of both is not always coordinated very well.
In case of a transfer the holder of the title and the purchaser have to go together to a PPAT (an official appointed by the Minister of Lands who took a special exam (usually a notary or a head of sub-district)). When the necessary approvals are there, the PPAT makes up the transfer deed. Upon registration of the deed at the Land Office, the Land Book and the title certificate will be updated.
PPAT's, although their work is monitored by the Land Office, operate as private practitioners for the land deeds related tasks. After a few pilots, private licensed surveyors will be introduced in addition to the present surveyors who work for the National Land Agency.

In general it is reported that there is a wide gap between the law in the books and daily practice. The procedures appear to be lengthy and expensive for the right holder, certainly in relation to the perceived benefits. This is worsened by weaknesses and widespread corruption within the involved organizations. Clients may have to pay much more than the official fees to get results. Many people do not perceive land registration as a means to increase the security of their land rights. Land registration might even reduce the (internal) security for those living in functioning *Adat* communities. However, when such an area comes under development, non-registered rights suddenly stand rather weak under the system of 'land acquiring'. They might get lower compensation paid, or their rights might be totally ignored and the land is taken. Improved land registration (that is more efficient and clearly allows for customary rights) would likely help a lot in such situation, if and when administered correctly and honestly.

6.2.3 Developments

In the case of 1996 Indonesia the Land Administration Project had just started as the first five year phase of a 25 year program to register all parcels. After the lessons from several pilot projects around Jakarta were learned, the systematic registration under the project became very productive. At the end of the first five year project about 600,000 titles were adjudicated per year.
Most of the improvements to the Government Regulation on land registration that were under discussion in 1996 have been enacted in 1997 (PP24/1997). It includes *inter alia* the provision that registered titles can only be challenged within 5 years, provisions for proving

undocumented titles, the obligation to compare certificate against the current register, the obligation for PPAT's to register a deed within 7 days, liability for PPAT's when they do not obey the law, provisions for more isolated areas to transact with provisional PPAT's or even without them, and a clear base for a systematic adjudication process. It does not include the possibilities for registration of customary communal rights. According to several studies performed as part of LAP, such possibilities, however, will be necessary to have registration increase tenure security in much of the outer islands (certainly in many rural areas).
From mid 1996 there has been political unrest in Indonesia. This eventually led to the end of the New Order regime, and publications on the rampant practice of corruption, cronyism, and nepotism (dubbed KKN), also in the land sector, emerged.
A new Basic Forestry Law (No. 41/1999) was enacted, which –after extensive pressure from NGOs and environmental experts– provides that the state must take into account the rights of *Adat* communities.(Rahmadi 2002: 5). It is still being criticized for making little progress on the key issue of the rights of local communities (World Bank 2000: 19). It is unclear how to prove that there is a functioning forest community (*Adat* or otherwise).
Important changes in the structure of the administration are being implemented, especially through decentralization of many former state bodies. It is disputed if BPN is included in this decentralization drive or not (von Benda-Beckmann 2002: 5). The written system of land tenure and land registration came under discussion. Many of the wrongs can be blamed on the way these were implemented by a centralized and rent-seeking administration, in a country overly focused on (large scale) 'development'. But many also see fundamental flaws in the BAL and related regulations, which only in name adhered to *Adat* principles. There is increased attention for *Adat*, although it seems that many do not really know the true meaning of this any longer and it is often not easy to determine what constitutes an *Adat* community these days. Re-introduction of *Adat* in the local government structure of West-Sumatra clearly has winners and losers. Among the latter especially those who were underprivileged in the past (like (descendants from) non-kinsmen and former slaves). There are also many claims being made to profit from (large scale) land use on land to which local (*Adat*) communities claim *hak ulayat* or similar rights, which creates new uncertainties (although they can very well be justified). It will be a while before the dust has settled on land related issues in Indonesia.

6.2.4 Task Table

	done	who	mandatory	legal effect	consequence of mistake	indemnified
nego-tiating	yes	s,p, (r)	yes	agreement	no transfer	no
advis-ing	some-times	lawyer	no	lawyer can be liable	possibly no transfer	some-times
legal-izing	yes	PPAT (deeds official)	yes (in most areas)	registrable deed	no transfer[74]	yes
surve-ying	yes	BPN	on sub-division	necessary for registration	unclear title	yes
map-ping	yes	BPN	on sub-division	necessary for registration	unclear title	yes
index-ing	yes	BPN	on sub-division	no direct effect	no direct effect	no
map-ping	partly	BPN	if index map is available	no direct effect	floating parcel	no
check-ing	yes	BPN	yes	necessary for registr.	no transfer[24]	yes
stor-ing	yes	BPN	yes	base for certificate	no transfer[24]	yes
index-ing	yes	BPN	yes	no direct effect	no direct effect	no
regis-tering	yes	BPN	yes	necessary for reg.	no transfer[24]	yes
issu-ing	yes	BPN	yes	needed for later trans.	strong eviden-ce, no full proof	yes

Figure 6.3; Tasks and questions of the Indonesian system of land registration

[74] The courts have accepted unregistered deeds as valid.

6.2.5 Concluding Summary

support of the land market
Land registration should never be considered a means by itself. It is there to serve among others the land market, about which the World Bank (1994: 2) says: "Efficient and equitable land markets are an important basis for modern economic development, since they would quickly and flexibly accommodate changes in land use, allow fair land transactions, and mobilize financial resources through collateral arrangements. A comprehensive, accurate and efficient land registration system is a *sine qua non* in developing such land markets, since it enables land to be freely traded, by reducing or eliminating the risk perceived by purchasers and vendors of land. However, land registration in Indonesia has not yet reached that stage."

are there problems with unregistered land?
It is clear that there are many areas in Indonesia where only very few land rights are part of a 'modern' land registration. In fact there are only very few areas where all land rights can be found in such a 'modern' land registration. In which areas and for which types of right holders does this absence of land registration cause what kind of problems, and is the present land registration able to solve these.

The diversity of communities in Indonesia is very large, from the business center of Jakarta to the Baliem Valley, one can find almost all levels of economic development and social coherence. And since Indonesia is developing and changing at an enormous speed the situation in any given community can change rapidly. In a decreasing amount of traditional, close-knit communities, people do not experience a serious lack of (internal) legal security regarding their land rights, although no 'modern' registration of land tenure is in force. In such areas *Adat* is effective in protecting those rights of the villagers that the local *Adat* acknowledges. *Adat* is highly recognized by the villagers for maintaining their land rights, and in such areas there is a long time absence of conflict over the land among the villagers. And it is rather efficient, because villagers are familiar with it and respect it. In a documented case on West Kalimantan only a few villagers who live near the main road have title certificates based on the BAL rights, and this concerns mainly the land on which their houses stand (Sumardjono et al 1996: 31-38). However, it is not always easy to determine exactly what constitutes an *Adat* community and what is exactly the *Adat* that applies there. In many case the community has become heterogenous, with people from elsewhere living in the area as well. In general *Adat* favors (certain groups of) kinsmen over outsiders and other underprivileged groups (like descendants from slaves or women). But if there is still a functioning *Adat* community, it is well possible that the process of land registration, including conversion from local customary land rights to BAL land rights, is felt as an attack on their 'legal' security, when the people feel a strong attachment to the existing customary law (Henssen 1988: 39). Nevertheless Gautama and Hornick (1983: 73) described the situation of the land that was unregistered and subject to unwritten, customary law, as giving a relatively low degree of legal certainty to the indigenous people, when compared with the land under Western law before 1960.

That can be said to hold quite clearly for the external legal security in such areas. When land in such an area draws the attention of those planning a ‘development’ project, like infrastructure, plantation or transmigration, the community usually stands rather weak. In general in Indonesia the very complicated procedure for expropriation is avoided by applying ‘land clearance’, which involves no force, but voluntary abandonment. The one

looking for land makes an offer to those holding rights, who –theoretically– can accept it, or turn it down. When a governmental agency is involved, a Land Clearance Committee will advise upon it. In practice the right holders are pressured to accept the offers, even if they do not want to part from the land or the compensation is unrealistically low. (de Haas-Engel 1993: 146-151) Those persons and communities having unregistered (*Adat*) rights are treated even less favorable. They might be considered mere users and only get a bonus instead of full compensation, and communal rights (especially in forest areas) are regularly ignored and the land is just 'grabbed' (World Bank 1994: 28). In such cases social conflict arises with the traditional, *Adat* land tenure systems (Soni Harsono 1995: 3).

In an increasing amount of areas, especially in the urban fringes or other development areas, the close-knit societal structures are gone and there is no longer a homogenous *Adat* community. The traditional land rights seem to be inadequate and a lack of security is felt when the 'modern' land registration is missing (also Sherer 1985: 7). The lack of a 'modern' land registration is of course felt much more, when there is no form of written evidence at all, than when the village office keeps a rudimentary land register of some sort. In the former case it is also very hard to get (still unregistered) land rights converted into registered BAL-rights without written evidence. To overcome this, the draft for the revision of Gov. Reg. No. 10/1961 proposes to make it possible to replace written evidence with holding the land for 20 years in good faith with the consent of the local *Adat* community. But this provision runs the risk of abuse, especially when the *Adat* community is not really functional any more. In such areas the value of land has risen very much, because of the expected possibilities for high economic value development (this might include speculation). Because buyer and seller usually will not know each other in these situations, and certainly will not belong to the same coherent community, an informal land transfer will much easier be subject to fraud and false statements (compare § 1.2.3).
Regardless of these problems many areas exist in which development (especially of offices and houses) takes place at a high rate. And many of the land transfers necessary for this take place without registration. Even in the Jakarta business district big office buildings are built on unregistered land.

Because of the lack of registered land, and the troublesome procedures for registering a mortgage on registered land before enactment of the Mortgage Law No. 4/1996, the use of land as collateral for (bank) loans did not encourage banks to give loans, especially not against low interest rates[75], as is the case in societies with an efficient and secure land market. Whether the new mortgage law, which only allows a mortgage on unregistered land if an application for registration is filed at the same time, will improve this situation will become clear in the near future.

<u>can the present land registration activities solve these problems?</u>
From the above it becomes clear that the lack of a 'modern' land registration causes problems in Indonesia. The extent of the problems differs between traditional, rural and modern, urban communities, and is especially prominent in areas where developments (both rural and urban) are being undertaken. But can the present land registration activities solve these problems?

[75] Soni Harsono (1995: 14) indicates that it is noted that due to general uncertainty in rights in Indonesia, interest rates are higher than in surrounding countries.

Again the answer is not a simple yes or no, but we have to look at the background with regard to land tenure and land registration, as can be found in the land policies and the basic legislation, and the implementation of it in daily practice, as can be seen in the lower regulations, the actual operations of the government staff involved and the appreciation of it by the people.

The Basic Agrarian Law No. 5/1960 can be seen as a policy statement as much as as a law. Its policies emit the spirit of the time, and it leaves much room for uncertainty. This causes complex problems in the day-to-day operations. Questions can be asked with regard to the results of a national Seminar in 1992 in which it was concluded that the BAL itself is still suitable for the present, fastly developing society, and does not need to be revised (Djoko 1993: 16). The BAL is only a basic law, and it needs many additional regulations. Some of them even at the high levels of law and of government regulations. Of both types several important ones are still missing or need to be revised.
A serious problem on this level can be seen in the lack of coordination between the BAL and the Basic Forestry Law. Especially regarding the recognition of traditional group rights the attitude of both laws differs. Furthermore the laws are not clear as to how to determine which one of them is applicable in a certain area.

There also can be many problems identified with the implementation of policy regarding land tenure and land registration as laid down in the BAL. BAL aims for a land law that should be written and supported by an efficient and effective land registration system. Whereas the elucidation to the BAL states that land registration that is not mandatory is totally useless (BAL 1960: 16), the informal transfers have continued. The government staff is not willing or not able to stop it, and the people are not convinced of the advantages of doing it in the formal way (at least in relation to extra time and money that it would take). And although the BAL recognizes that it will take time to register the whole of the country, the progress until recently has been extremely slow. The people apparently are not convinced of the advantages of applying for registration, and the government has not given a high priority to starting registration projects in the past. The fact that, although in name based on *Adat*, the BAL focuses much more on unified and individualized land rights, than on the local varieties of mainly communal *Adat* rights.

The BAL clearly rejects the domain principle[76] from the colonial era, but replaces it with the concept of land managed by the State, which in practice does not differ much from it. The idea that all land which has no other owner –with written proof of his or her ownership–is land owned by the state can be recognized in many (land registration) activities in practice. One example being the treatment of traditional group rights in general and in forest areas in particular (the last also caused by the different approach of this in the 1967 Basic Forestry Law). Another example is the deviation from the BAL on the issue of existing land rights which are not supported by written evidence. When one wants to have such land registered, the existing land right will not be recognized (and when necessary converted), but the government will grant the land to the person who thought he or she already owned it. This will cost this person more money, take longer and not strengthen the believe of this person in the justice of the land policy and its implementation. When such land is wanted

[76] Under the domain principle (*domeinbeginsel*) it is assumed that all land to which no other rights can be proven, are in the domain of the state. This principle was announced in 1870 as part of a major revision of the colonial Agrarian Law.

for some ‘development’ project, the person stands very weak in the process of land clearance, and might feel that the land is grabbed from him, her or their community.

Whereas land surveying and mapping of parcel boundaries, which is relatively expensive, is meant to enlarge the security of the land right one holds in such a parcel, the practice in sporadic registration has not accomplished this. Because of the lack of (local) reference networks, the lack of large scale base maps or photo-maps and the fact that often no connections were made to hard topographic features in the area (only when they were on or directly in the vicinity of the parcel), the parcel-maps produced during sporadic registration cannot prevent the later issuance of a title certificate for a parcel that (partly) overlaps with this one.

Whereas the BAL aims at making the greater security of land rights readily available to all Indonesians, in practice a procedure for registration has evolved that is complicated, time consuming and expensive (with formal and informal fees). So for many people the possible disadvantages of having unregistered land and participating in informal land transfers as they perceive them, do not outweigh the direct disadvantages of having the land registered. Each person makes his own 'cost-benefit analysis' is this regard, whereby the benefits will be underestimated in general because of the lack of awareness of the land policy and role of land registration within it. A comparison could be made with the possibility introduced in 1872 (sic!) to convert traditional *Hak milik* to the colonial right of *agrarische eigendom,* with written rules, registration in the land registry and possibility of mortgaging it. "The conversion procedure was sufficiently complex so that few took advantage of the opportunity." (Gautama and Hornick 1983: 75).

The system of land registration in itself seems quite decent. The legal base provides a satisfactory start, but the practice should adopt an unambiguous obligation of registration of every transfer. Apparently there is a discrepancy between the benefits for most people of having their transfers registered, and the hassle of doing this. The legal base could also be improved by introducing the principle that the de facto situation after a certain time will be acknowledged *de jure*. Rules like a statute of limitations on making claims against the registered situation and the introduction of prescription rights can be useful in this regard, but only if the administrative system is strong enough to support this.
The organizational frame can be regarded as satisfactory, since all registration related tasks (keeping the records, cadastral surveying and issuing title certificates) are fulfilled by the same organization (BPN), although co-operation between the divisions of BPN could be improved. The division of tasks between BPN and the PPAT's, and their cooperation seems adequate. A problem, however, is that for a large part of the population both PPAT and the Land Office are not close by. There are 301 Land Offices and thousands of PPAT's, but they are rather concentrated in the cities and main towns. Further distribution of Land Offices would be difficult, because even now it is hard to get good staff for the small offices.
In the field of technology very traditional methods are used. They are time consuming, and since the lack of staff, more efficient methods would be highly desirable. The biggest problem in this regard is the lack of (qualified) staff at BPN, being willing and able to undertake the sensitive task of land registration in such a way, that it is effective, efficient and the public will trust it. Right now the work methods and integrity of the staff involved can not guarantee that the procedures will lead in practice to the effect one would expect when knowing the theory of the system.

So, apart from only covering a minority of the parcels in the country, the land registration has not been responsive to the needs of the public (too much time needed to process title deeds[77]); made it difficult to obtain legally reliable information and has lacked legal provisions for the protection of *Adat* rights, especially regarding locally accepted, but undocumented occupation and group rights. This has led to social conflicts, inhibited land transactions and discouraged private investments (World Bank 1994: 3).

final remarks

Although the system of land registration in Indonesia looks quite decent at first sight, the practice is very different. In a growing number of places throughout the country the lack of registered land causes problems, but in general the people do not see the present land registration activities as a useful means to solve these problems.

The most serious problem is the mentality and the knowledge of the staff presently involved in land registration. Also the procedures for first registration and the registration of subsequent transfers are complicated, including all kinds of permissions which only partly deal with land registration as such. Long process periods, high costs (due to informal fees several times the formal fees) and a lack of real benefits from the result in their minds (partly because of unawareness and partly because of lack of mandatory registration in practice and the weak administrative processes) will keep many people from applying for land registration.

The government of Indonesia is aware of these problems and has started –with aid from the World Bank and the Australians– the Land Administration Project as the first five year phase of a twenty-five year program. In this project a lot of attention is given to strengthening the staff, raising public awareness, studying the impact in non-urban areas and starting systematic registration of the whole country at a high speed.

A short look at the situation with regard to the technical, legal, and organizational aspects gives the following picture.

The technical aspects are inadequate. The methods used are very traditional and not very efficient, which is a problem since there is a lack of staff and much work to be done. Especially the surveying and mapping of 'floating' parcel-maps in sporadic registrations is ineffective, and should thus be seen a mistake.

The legal aspects are mediocre at best. The policy framework of the BAL is lacking much needed clear and coordinated regulations. The acceptance of informal transfers without any regulation of them has to be altered if an effective and efficient system of land registration will ever emerge.

The organizational aspects are inadequate. Although all land registration functions are combined within BPN, numerous circumstances have made it impossible for BPN to let the land registration function in an effective and efficient way. The daily practice is in many ways not in concurrence with the land policy as laid down in the BAL. The present state of the knowledge and mentality of the staff has led to a mediocre administrative system, that is not seen by the people as the solver of their land tenure problems.

The Indonesian government has started the Land Administration Project to improve the organizational, legal and technical aspects by training and awareness campaigns, the revision of key regulations and the acquiring of new equipment.

[77] A proposal to allow 45 days after registration of the deed for BPN to issue the title certificate in the revised Gov. Reg. on Land registration was turned down by BPN.

6.3 Austria (1996)[78]

6.3.1 Functional Description

overview
Virtually all land has been brought under the present system of land registration. This system consists of two (partly overlapping) sets of information collections. The first one consists of the parcel-based property register ('land book'), supported by the archive of deeds and an index map ('registry map', which is a copy of the cadastral map). This is kept and maintained at the local courts. The second one consists of a parcel based land register ('cadastral register'), an index map ('cadastral map') and the archives of survey documents. This is kept and maintained by the regional survey departments.

procedures
The transfer of property rights requires a notarized deed which has to be registered in the land book. The deed can be drawn up by the parties themselves, but usually the assistance of a notary or other lawyer is used. The obligatory notarization is limited to verification of the signatures by a notary. In many cases the transfer deed has to be accompanied by several other documents (mostly governmental approvals) before a successful application can be lodged for registration. The registrar ('land book judge') will check the deed and the other documents before he or she will make his or her decision. In case of a positive decision he or she will make the appropriate entries in the land book. The survey department will be informed of the changes.

identifiers
Each property is required to be identified by a property number, and is made up of one or more parcels. These parcels are identified by a unique parcel number, which refers to the cadastral map. Most of the boundary surveys are undertaken by licensed surveyors, who have to offer their survey documents to the survey department for approval and –if necessary– issuance of parcel numbers. The information is used to update the cadastral map and registers. The land book court is informed of the changes. Boundaries have to be monumented with boundary stones or other markers.
The cadastral map finds its origins in land taxation, and has the appropriate specifications. To improve the map, the Austrians introduced in 1969 the 'boundary cadastre'. The state guarantees the boundaries of a parcel entered into the boundary cadastre, and these boundaries are no longer subject to prescription. To enter a parcel one needs written consent of all neighboring owners, and a precise survey of the whole parcel. So far about 8% of the parcels have been converted into the boundary cadastre. Parcels of both types of cadastre are depicted on the same cadastral map.

use of ICT
Already in the early 1980s the digital 'land parcel database' was set up, which contains both the information from the land book and the cadastral register. The information which used to be duplicated in both, is now kept only once. The database has completely replaced the

[78] For a full description see the 'Report on the case Austria', Delft/Vienna/Innsbruck, May 1997/February 2002. The draft case report was also used as an important base for the report on Austria by Prof.Dr. Theo Bogaerts as part of the Review of Planning Options, Cadastral System in Poland, Comparative Analysis of Cadastral Systems in Selected Countries, dated December 1997.

analogue registers. Each land book court and survey department inputs the changes within its jurisdiction into the database, which is kept centrally at the Federal Computer Centre in Vienna. All land book courts, survey departments, notaries and licensed surveyors and many others have on-line access to the database. The digitizing of the cadastral map is combined with an upgrade of its quality, and thus taking some time. In 1996 some 60% of the country had been finished. With financial assistance from local authorities and technical assistance from the licensed surveyors the aim is to complete the whole country by the year 2000.

participants
The Austrian system of land registration is a joint effort of the land book courts, the Federal Office of Metrology and Surveying, the licensed surveyors and the notaries (and other lawyers). In 1996 there were 187 land book courts, which are part of the lowest level of the judiciary system, whereas the Federal Office of Metrology and Surveying had 68 regional offices (survey departments). There are approximately 260 licensed surveyors, organized in a professional body. Since 1994 their fees are no longer controlled by a legally binding ordinance. The number of notaries and their fees are set by government, and their quality is controlled by a professional body as well.

type of system
In the traditional classifications the Austrian system is 'title registration'. The registered owner has 'public faith' of being owner. The title registration is operated in close cooperation with a cadastre in the Napoleonic sense. Parcels are mainly defined with 'fixed boundaries', monumented or marked and recorded in national coordinates and depicted on the cadastral maps (numeric cadastre). Each boundary survey is documented in a title plan (a 'certified survey document'). The owner receives a copy of the transfer deed and the relevant decision of the land book judge, which resemble a title certificate.

practice
The Austrian system looks very consistent and works well in practice. It is supporting an active land market, with a high level of legal security. The author takes the opinion that the system is more bureaucratic than necessary. It could be operated more efficiently if the Austrians accepted a more 'risk management' oriented approach, instead of the present aim for 100% solutions[79]. It also seems to be over-decentralized, with some land book courts only handling a few hundred transfers each year. However, the introduction of a combined database of the land book courts and the survey departments, has been a brilliant move.

6.3.2 Aspect Based Description

technical aspects
The national geodetic framework is well established and maintained. The cadastral surveys are done in relation to this, and already 40% of the boundary point coordinates are of 'numeric cadastre' quality. Parcels with such coordinates could be moved to the 'boundary cadastre' if all adjacent owners sign off on their correctness. About 8% of the parcels has been entered into this 'boundary cadastre'. Boundary points have to be monumented. The requirements for accuracy is +/- 15 cm, for the worst case where both base points deviate

[79] It seems to be a good example of an existing system that has been so perfected that its legal security level seems to be a 100-120% (Kaufmann/Steudler 1998: 26-27).

from the allowed maximum of +/- 7 cm in opposite directions. The survey work is performed with modern equipment, although little GPS was used for this in 1996. Most subdivision surveys are performed by licensed surveyors, who pass their data on to the survey departments for approval and updating of the cadastral map. In 1996 60% of the cadastral maps had been digitized. In addition to the land parcel database, there is also a boundary point database. Both can be accessed on-line. Local and national authorities are using GIS more and more, and the cadastral data is one of the data sets that is shared between different authorities.

Figure 6.4; Survey of subdivision caused by road improvement just East of Innsbruck

legal aspects

The legal base for most of the system of land tenure is the General Civil Lawbook (1811). The real rights listed in it are possession, ownership (both single and joint), easements (both personal and real types) and lease (which can be registered and then gets real right characteristics). It includes also the mortgage and preemption rights. Other legislation allows for long lease (*Baurecht*) and condominium (*Wohnungseigentum*).

The legal base for the system of land registration is made up of several laws. For the land book there is a law on its creation (1929), a law on its keeping (1955) and a law on its migration to the computer (1980). For the cadastre there is the Subdivision Law (1929) and the Survey Law (1968). Transfer of a real right consists of two phases. The first phase deals with the transaction as such ('title'), the second phase with the publicly visible activity ('means of acquiring'). The latter includes the application for registration of a notarized deed at the land book court. When the land book judge has approved the application, the land book will be updated and the legal transfer takes place retrospectively to the moment the application was filed. The 'booking principle' (see § 2.3.1) plays an important role in the Austrian system.

Transactions in which a parcel has to be changed or formed, have to be processed in the cadastre first, before the land book can be updated. The subdivision will usually be carried out by a licensed surveyor, and entered (provisionally) into the cadastre (map and register) by the survey department. After this the application can be made at the land book court, and if the transactions is accepted there, all data will be updated and final.

The causal doctrine is applied in Austria, which means that problems in the 'title' are not repaired by the entry in the land book, although *bona fide* third parties can rely on the land book.
The legislation on privacy does not apply to the system of land registration. Although all information in it is public, the search by name is not generally available (this was introduced with the computerization).

organizational aspects
In the case of 1996 Austria land registration involves the land book courts, the survey departments, notaries (and other lawyers) and licensed surveyors. The Federal Computer Centre plays an important supportive role.
The land book courts keep and maintain the land registry, including controlling the deeds offered. Legally the notary's role is limited to certifying the signatures on the deeds, but often he or she or another lawyer will assist in drafting it as well. The survey departments keep and maintain the cadastral map and register. Cadastral surveys, mainly subdivisions, are mostly done by licensed surveyors (some by governmental surveyors). Both the land book and the cadastral register are computerized and kept in one database, which is connected to all relevant offices. This network and the database are supported by the (recently privatized) Federal Computer Centre.
The separation between registrar and cadastre is very strict in a legal and organizational sense (different laws and ministerial responsibilities). In practice they cooperate very well, and in a technical and administrative sense it can be seen as an integrated system of land registration.

The daily practice seems to be much in tune with the 'law in books'. Even when one considers some provisions quite bureaucratic, the benefits of using the system surely outweigh the time and money involved in most cases. An occasional exception have been reported for unregistered leases of rural land in some areas, and the use of the not-registered right to have a (temporary) construction on someone's land (called *Superädifikate*) instead of the complex real right of long lease (*Baurecht*). All in all a near perfect system for a well organized society where there is good cooperation between different parts of the administration.

6.3.3 Developments

Just after the case study in 1996, the Federal Office of Metrology and Surveying was reorganized and the number of survey departments reduced by 35%. In 1997 changes were made in the legislation to allow for improved on-line access to the land parcel database (including abolishment of subscription fee and a motivated reason for getting access).

6.3.4 Task Table

	done	who	mandatory	legal effect	consequence of mistake	indemnified
negotiating	yes	s,p, (r)	yes	legal base for transfer	no transfer, but 3rd parties protected	usually
advising	usually	lawyer, notary	no	liability for expert	no transfer, but 3rd parties protected	yes
legalizing	yes	notary	yes	prerequisite for registration	no transfer, but 3rd parties protected	yes
surveying	yes	Licensed Surveyor	before subdivision	prerequisite for registration	no transfer, but 3rd parties protected	yes
mapping	yes	Licensed Surveyor	before subdivision	prerequisite for registration	no transfer, but 3rd parties protected	yes
indexing	yes	Survey Department	yes	prerequisite for registration	no transfer, but 3rd parties protected	yes
mapping	yes	Survey Department	yes,esp for boundary cadastre	liability for state for bound. cad.	boundary cadastre is guaranteed	yes
checking	yes	Land Book Court	yes	transfer on moment of acceptance	still transferred, but 3rd parties protected	yes
storing	yes	Land Book Court	yes	no direct effect	no direct effect	yes
indexing	yes	Survey Department	yes, but for mainly for taxes	no direct effect	no direct effect	yes
registering	yes	Land Book Court	yes	introduces ‘public faith’	still transferred, but 3rd parties protected	yes
issuing	yes	Land Book Court	yes, copy of decision	no direct effect	no direct effect	yes

Figure 6.5; Tasks and questions of the Austrian system of land registration

6.3.5 Concluding Summary

It can be said that in Austria an effective land market has operated for a long time. This land market is supported by a well run, but elaborate system of land registration. There is a large group of players, including the land registry courts, the survey department, notaries and attorneys and licensed surveyors. In the more recent history these players have been able to supplement each other without many problems. New technology has been implemented energetically[80] by both the land registry courts and the survey departments. A very good step was set by combining all land related data from those two organizations in one database, which is accessible by all players. Before this, much of the information was kept in duplicate at both organizations and in the 1970s complaints about the chaos at the land registries was heard. (Hofmeister/Auer 1992: 98). The use of information technology in the field of land related data has offered Austria an appropriate solution in a timely fashion (BEV 1993: 50).

Without any doubt the system is supplying good security of title to land (real estate) to the Austrian society. But the 'price' they have to pay for this seems quite high (similar Hofmeister/Auer 1992: 79-80).
The high registration fee (1 - 1.1%) is usually supplemented by the fees of the private practitioners (notary, attorney, surveyor), and a stamp duty has to be paid for any form sent towards a governmental agency.
In addition to the money that has to be paid, the system also appears to be bureaucratic and not quick. To be able to make an application to have a transfer registered, one needs four to six documents. Each of which needs some input from a governmental organization (at national and/or provincial level). It takes a lot of time to get all these documents, and stamp duties and/or fees have to be paid. And depending on the workload of the staff within the local land registry court, the time between application and actual registration can vary between a few days and several months.
It is not desirable that such differences exist between regions. This is only one example of the effect of the large number of offices throughout the country. Although Austria is larger in size and traveling is much more difficult because of the topography, the difference in the number of offices as compared to for instance the 15 offices found in the Netherlands is astonishing. There were 68 survey departments in 1996, whereas there were 187 land registry courts, following the organization of the district courts. Most of the offices have a limited work load and a small staff. This makes them very vulnerable for absenteeism of staff (illness and holidays) and sudden peaks in the workload. In addition, it is less efficient to introduce all kinds of computer applications in smaller offices. The system seems to be over-decentralized! It was reported that there are land registries with only 100 entries a year.

The combination of many offices, high transfer costs and long processing times is likely to hinder the land market of growing to its full potential, even though the system supplies a high level of security with regard to the transactions that do occur.
Such a system will create evasive action by some parties in the land market. An example of this, in a legal way, can be seen with the *Superädifikate*, which are used in almost all cases of constructing a building on the land of someone else. This construction is only meant for buildings which are erected with the intention to be there only for a (relatively) short period of time. For 'everlasting' buildings one should use the *Baurecht*, which is

[80] In 1993 the responsible minister called this 'a notable innovation thrust' (BEV 1993: 5).

considered too complicated in practice. Unregistered transactions have been reported to take place, esp. in the rural domain (50% of leases are unregistered), and in cases where the (provincial) government might not be willing to grant needed permissions (like foreigners buying holiday houses).
The Austrian system is working well in Austria, but it seems to cost more than absolutely necessary, and certainly more than many other societies are willing or able to afford. In the author's eyes, this makes the system as a whole not very suitable for unchanged exportation, not even to neighboring Central European countries[81]. The unsuitability for exportation applies especially to countries which have no culture of good cooperation between involved organizations.

A short look at the situation with regard to the technical, legal, and organizational aspects gives the following picture.

The technical aspects are extremely well taken care of. The methods used are scientifically sound, use modern equipment and produce excellent results. The quality of the surveying and mapping might actually surpass the needed requirements, and thus cost too much. The only oddity can be found in the uncontrolled use of digitized graphic boundary points within the numeric cadastre.

The legal aspects are extremely well taken care of as well. The Civil Code gives a solid framework, and the system of land registration as such is laid down in well established laws. Because everything has worked well for a long time, there has grown some inertness, hampering further improvements (see also Mansberger et al 2000: 95). The level of security is high, as are the costs and the time needed to process a transfer.

The organizational aspects are satisfactory. Maybe not extremely efficient, the system works out very effectively at the moment. Because of the number of players involved, conflicts could arise quite easily, but this has not happened for a long time. The introduction of the combined database has been a brilliant move, avoiding discrepancies and double work between land registry and cadastre. A further combination of them seems very difficult because the Austrian see the land registry as a part of the court (the judiciary). In their minds a governmental organization (authority) can not take decisions influencing the (personal) rights of people. (see also § 3.1.2 and 3.2.6).

[81] In practice there has been a lot of attention from these countries for the Austrian model; as can be judged from the popularity of the book by Hofmeister/Auer (1992) and the large amount of visits by delegations from these countries to Austria (see BEV 1993: 6). Reviewing such a visit an Austrian official, however, commented that he had the impression that the visitors recognized very well which are the points to be copied and which are Austrian bureaucracy.

6.4 Ghana (1997)[82]

6.4.1 Functional Description

overview
It is estimated that about 30% of the parcels has been brought under a system of land registration. Almost 10,000 parcels are under the 1986 Land Title Registration Law (explained here under "B"), whereas the rest of the registered land falls under the 1962 Land Registry Act (explained here under "A").
A. The latter system consists of the archive of deeds ('deeds register'), and is supplemented by the information collections of the 'records room' at the secretariat of the Lands Commission. This includes an index map ('town survey sheet') and parcel-based indexes. The deeds register is kept at the Deeds Registry, which functions as a part of the Lands Commission, which holds the other information collections.
B. The former system consists of a parcel-based property register ('land title register'), and the archives of survey plans ('title plans') and transfer forms. In case of systematic registration there is also an index map ('registry map'). Although the Survey Department plays an important role with regard to the preparation of the registry map and the title plans, all of the information collections are (also) kept at the Land Title Registry.

procedures
A. According to the law any written document relating to the transfer of any interest in land has no effect until it is registered. Before such a document is registered, several approvals have to be present (incl. tax clearance certificate and often permission from the Lands Commission). Usually the document is drafted by a lawyer, but this is not mandatory. The section of the law empowering the registrar to verify if the intended effect of the deed could take place, has never been enacted. The registrar, however, also functions as the legal expert within the Lands Commission, and thus can usually prevent the granting of permission in case something is obviously wrong. Many customary land transfers still take place orally, which has limited the effect of the law which only deals with the registration of written documents (an attempt to register oral agreements in the early 1970s has failed).
B. The transfer of registered land can only be done through prescribed forms, which have to be registered within three months. The form will be checked and the payment of stamp duty is another prerequisite for acceptance. The law makes no reference to the land control functions of the Lands Commission, and apparently some transfers which need, but do not have, permission have in certain cases been registered. Upon acceptance of the form the entry in the register will be updated, and the land title certificate will be issued or updated as well.
In areas declared registration district there should be systematic registration, but so far progress has been slow. In practice most first registration has taken the form of more or less sporadic registration. The mandatory conversion of existing deeds records has not been performed in most cases. After a bad start, improvements are being introduced.

identifiers
A. A transfer document usually refers to a certified map, either one connected to a previous document on the same property, or one specially prepared for this transfer by a licensed

[82] For a full description see the 'Report on the case Ghana', Delft/Accra/Kumasi, April 1997/February 2002. A paper (Zevenbergen 1998a) was mainly based on the case of Ghana.

surveyor. In practice many of these plans are prepared by others, and only signed by a licensed surveyor. This has led to many maps of bad quality, and therefore a mandatory approval by the Director of Surveys has been introduced in 1989, but this has had little effect. The director is also solely responsible for the licensing system. In practice there are no licences being revoked or surveyors held liable for mistakes. Although the law does not demand the keeping of an index map, in practice such a map is kept within the Lands Commission by plotting the parcels onto the town survey sheets. The Lands Commission also assigns a unique reference number. The sheets are usually outdated, their paper is of poor quality and the scale is often not sufficient. This leads to a 'cadastral map' of at most mediocre quality.
B. Every registered property has to be identified by a title plan, even if it is represented at the registry map. All title plans have to be signed by the Director of Surveys himself. These registry maps are prepared as part of the systematic registration by (or under supervision of) the Survey Department. If no registry map is available, a separate survey by the Survey Department will be made. The latter poses a potential problem, due to the lack of adequate index maps. This problem did occur at the outset of the system, and might re-appear when sporadic registration is allowed in the whole country (as suggested in a draft bill). The title plans form a bottle-neck in the system, due to their manual preparation and the fact that the Director of Surveys approves them all himself.

use of ICT
A. The registers and maps are still kept in an analogue form. A start has been made with computerizing some of the indexes, and other pilots are considered.
B. The land title register is completely analogue, and no serious plans for computerization exist. A pilot with computerized preparation of title plans, based on digitized registry maps had promising results, and is likely to be introduced, alleviating a part of the bottle neck.

participants
The Lands Commission, the Land Title Registry and the Survey Department are all under the supervision of the Ministry of Lands and Forestry. This has not assured good cooperation between them, which has badly affected the systems of land registration in the country. The Survey Department operates over-centralized, and any approval needed has to be got in Accra from the Director of Surveys himself. The licensing system of the surveyors is not directly connected with the professional body 'Ghana Institution of Surveyors' and appears weak.
A. The older Ghanaian system of land registration is run by the Deeds Registry and the Lands Commission, with assistance from private practitioners, both lawyers and surveyors. Since 1989 the Survey Department is also formally involved. The Deeds Registry functions as a part of the Lands Commission, although the registrars are formally employed by the Attorney General's Office. There are only six registry offices (some of which do not have their own registrar). Recently some of the functions of the Lands Commission were decentralized to the ten regional lands commissions.
B. The newer Ghanaian system of land registration is run by the Land Title Registry, with assistance from the Survey Department. The Land Title Registry is independent from the Attorney General's office. They intend to establish an office in each of the declared districts (so far four offices have been established, but only one has issued title certificates so far).

type of system
A. In the traditional classifications the older Ghanaian system is referred to as an improved deeds registration. Parcels are represented by certified maps, which usually depict 'general

boundaries'. Upon registration one can request a certified copy or an extract from the deeds register. In practice one relies mainly on a 'title search' performed at the 'records room' of the Lands Commission.
B. In the traditional classifications the newer Ghanaian system is referred to as a title registration. Parcels are represented by title plans. The boundaries, although in general referred to as 'general boundaries', are demarcated and monumented. Upon registration one receives a 'land title certificate' which includes the title plan and a copy of the entry in the land title register. Although the title is in principle indefeasible, the law recognizes quite some overriding interests, including actual occupation. This is caused by an attempt to avoid changes in the substantive rights of the customary land tenure systems, but also poses a threat to the completeness of the system of land registration.

practice
Ghana has had, and still has, a reputation for land litigation. There are numerous causes for this. The attempt to improve the situation by greatly improving the deeds registration with the Land Registry Act (1962) has only had limited success, and the later attempt to register traditional, oral transfers was never really implemented. Even the introduction of the Land Title Registration Law has had little effect so far. In practice the problems are often not experienced in the numerous traditional, close-knit communities that still exist, where the customary law system provides security of tenure. When such communities are 'overrun' by modern development, however, great problems arise. If the land is expropriated, compensation is often paid only to the (tribal) chiefs, or not paid at all. In other cases land is granted more than once by different chiefs. Confusion is also caused by the unclear mix of customary and national land law, which often seems to benefit the chiefs. The government is working on formulating a clear land policy and improving the land administration processes to implement it (with some assistance form the World Bank).

6.4.2 Aspect Based Description

technical aspects
In the case of 1997 Ghana there was no digital data storage or digital networks with regard to land registration, and only a small pilot to use GIS for preparing title plans. So only 'boundary determination' needs to be discussed here.

Although work is being done on the national geodetic framework, it is, especially in the North, not always dense enough to be used for land registration tasks. When the distance to a control point is too far away, the measurements are connected to hard topography. The requirements for accuracy are specified through the fractional misclosure. The standard is set as 1/3000, but usually 1/5000 to 1/10,000 is reached. For a scale of 1:2500 this relates to about two feet in the field.
Under the deeds system not every transfer needs to be accompanied by a certified map. If it does this map is signed by an official or licensed surveyor. In the latter case it should officially be approved by the Survey Department as well. In practice the records room of the Lands Commission keeps a kind of mediocre quality index map. Each parcel of which documentation has passed through the Lands Commission is drawn on existing topographic maps, although those are often outdated and starting to fall apart.
Under the title system every parcel on the register has to be depicted on a title plan signed by the Director of Surveys. When the implementation is done through systematic registration (as intended) the Survey Department will prepare a registry map (or have it prepared by licensed surveyors). When available aerial photographs are used in this

process. Their usability is limited in areas of rapid development, especially due to the long time that has expired since they were taken. Even for a parcel on the registry map, an individual title plan will have to be made and checked, before the registration can be completed. In practice a lot of applications for registration are filed for areas where no registry map exists yet. Then a separate survey will lead to a title plan. It is unclear if information about such parcels is put onto a kind of index map. Problems have arisen in such cases during the later, more systematic phase. In general the plans used for the title registration can, and regularly do, differ from the plans used with the contract and/or in the consent or concurrence procedures which are based on the approved lay-outs.

legal aspects

The system of land tenure is mainly made up of (unwritten) customary law. The allodial or paramount title is usually vested in the community, often represented by the stool (or skin) (see Figure 6.6). The occupant of the stool (or skin) is a trustee for the community. Members of the community can have determinable estate (or usufruct) in land, which can be seen as a kind of 'customary freehold'. Access to this right is inherent and not through contract. Nowadays the opinion is that one can alienate this right even to non-members, as long as the customary services (usually payment of drink money) are passed on as well. But creation of new freehold titles (customary or other) has been forbidden since the 1992 Constitution. These days land to erect a building on in (sub)urban areas can only be acquired through leasehold, both for government and most stool (skin) land. This leasehold is derived from (English) common law. The government intervenes with every leasehold agreement through the (regional) Lands Commission. Every leasehold agreement needs consent (on granting) or concurrence (on transferring) from this commission.

Use of land as collateral is regulated by the 1972 Mortgages Decree. The mortgagee is not a proprietary interest, but a security right, and foreclosure is done through a juridical sale only (usually an auction). Since 1979 this decree also applies to customary loan transactions, which –on paper– ended the use of pledges.

Although the customary law did not really know the concept of prescription, the 1972 Limitation Decree introduced the idea that someone who occupies land without permission, but not in secrecy and without force, becomes the owner of the land after twelve years.

Land registration in Ghana has for a long time fallen under the 1962 Land Registry Act which prescribes a (more or less improved) deeds registration system. The law is very weak on demanding parcels to be clearly defined and identified. In practice this is repaired to some extent by the administrative practices in the 'records room' of the Lands Commission. Two provisions that would have gradually improved the quality of the information in the deeds system have never been enacted. Also the attempts through the 1973 Conveyancing Decree to start registration of (oral) customary transactions has failed.

The 1986 Land Title Registration Law aimed at solving the land registration problems. The aim is not to change substantive law, and therefore the list of overriding interests is rather long. Transfers can be done through forms, but the number of other procedures like consent that should be performed first limits the benefits of this very much. Even when the registry map (index map) exists for an area, individual title plans, signed by the Director of Surveys, have to be prepared. These are reported to deviate regularly from the plans accompanying the contract and consent procedures. The adjudication procedure has run into problems, especially in the first registration districts in greater Accra. One problem has been that individual usufruct and leasehold titles have been registered, whereas the underlying paramount titles have not been registered (and their boundaries not settled). Other problems have been lack of resources at both the Survey Department and the Land Title Registry, and the weak cooperation with the Land Commission/Deeds Registry.

General principles of (customary) law hold that possession of land by itself gives a good title in most cases. Oral transactions are also quite normal. Even the Land Title Registration Law acknowledges actual possession as an overriding interest.
In the case of 1997 Ghana information law has virtually no bearing on land registration.

Figure 6.6; Stool representing a customary community (taken from postcard)

organizational aspects
In the case of 1997 Ghana land registration involves a long list of government agencies, including the Deeds Registry, the Lands Commission, the Land Title Registry, the Survey Department, and to some extent private practitioners as lawyers and licensed surveyors. The agencies are rather centralized and even where a few branch offices exist, these rarely have the full power to act by themselves. With the exception of the registrar of deeds, all agencies fall under the Ministry of Lands and Forestry. Nevertheless the cooperation between them leaves something to be desired.
Under the deeds system all functions are *de facto* performed within the Lands Commission, although the registrar of deeds is employed by the Attorney General's Office. Some of the cadastral function is administratively performed in the 'records room', without a legal stipulation demanding this.
Under the title system all functions are *de jure* performed within the Land Title Registry, which also keeps the registry map. But every document must be accompanied by a title plan that needs to be signed by the Director of Surveys (head of the Survey Department), even when it is directly derived from this registry map.
Private practitioners exist both in the legal and surveying domain, but do not fulfill a fundamental role within the system. Surveys for certified plans under the deeds system can be performed by both official and licensed surveyors. The rule that the work of the latter has to be approved by the Director of Surveys seems not to work very well. Under the title system the work is either performed by the Survey Department or contracted out to licensed surveyors. The licensing system is controlled by the Director of Surveys on his own, without a role for other government agencies or the professional and academic surveying community.

There is no legal obligation to use a lawyer when transacting in land. Nevertheless the situation is complicated enough to have most written transactions being performed with their assistance.

In general it is reported that there is a wide gap between the law in the books and daily practice. The official procedures appear to be lengthy and expensive for the interest holder, and the end result is not always what one would have expected. Although the title system has been introduced to tackle the weaknesses of the deeds system, it left several important weaknesses untouched. The introduction itself was also not very successful, due to internal and external factors. In the end land registration is only one link in the wider chain of land administration, which as a whole needs to be better coordinated and simplified.
In many areas there is clearly lack of security of title, causing land litigation and land grabbing. But so far the system(s) of land registration are not seen by many people as the way out of this.

6.4.3 Developments

In the case of 1997 Ghana there was attention for the need to improve land registration. A small component of the World Bank's Urban II project dealt with this (including aerial photographs and pilot for digitized preparation of title plans). In 1998 an international company, AmCad, was asked by the Government of Ghana, Ministry of Lands and Forestry, to perform a study on how to improve the Ghanaian system of land registration. The report 'Land Records Storage and Management Study' was published in May 1998. The report distinguished between short, medium and longer time solutions after a thorough analysis of the situation.
Among many other things the report calls for the recording of the boundaries between the paramount titles of the stools (and skins), and for a look into the feasibility of eliminating the registration requirement for a tax clearance certificate. In general it calls attention to the fact that the land administration problems should no longer be viewed as divided problems per agency, but should be viewed as a whole. Right now no one has the responsibility for ensuring that all tasks are completed.
The author's only reservation towards the report relates to the very negative description of the existing deeds registration system, which seems to ignore the administrative improvements made to it within the Lands Commission, especially through the (graphical) indexing in the 'records room'.
The author did not have any further information on if, and how, the recommendations of this report have been taken up in Ghana.

6.4.4 Task Tables

	done	who	mandatory	legal effect	consequence of mistake	indemnified
negotiating	yes	s,p, (r)	yes	agreement	no transfer	no
advising	usually	lawyer	no	liability for the lawyer	no transfer	usually
legalizing	no					
surveying	yes	Licensed Surveyor	for each parcel	prerequisite for registration	possibly no transfer	no
mapping	yes	Licensed Surveyor	for each parcel	prerequisite for registration	possibly no transfer	no
indexing	yes	Lands Commission	only for land use control	no direct effect	no direct effect	no
mapping	yes	Lands Commission	only for land use control	no direct effect	no direct effect	no
checking	no	(not	enacted)			
storing	yes	Deeds Registry	yes	transfer on moment of 'storing'	no transfer	no
indexing	yes	Lands Commission	only for land use control	no direct effect	no direct effect	no
registering	no					
issuing	no					

Figure 6.7; Tasks and questions of the Ghanaian deeds system of land registration

	done	who	mandatory	legal effect	consequence of mistake	indemnified
negotiating	yes	s,p, (r)	yes	agreement	no transfer	no
advising	sometimes	lawyer	no	liability for the lawyer	no transfer	probably
legalizing	no					
surveying	yes	Survey Dept.	for each parcel	prerequisite for registration	possibly no transfer	not really
mapping	yes	Survey Dept.	for each parcel	prerequisite for registration	possibly no transfer	not really
indexing	yes	Survey Dept.	yes	no direct effect	no direct effect	no
mapping	yes	Survey Dept.	yes	no direct effect	risk of double titles	no
checking	no	(not	enacted)			
storing	yes	Land Title Registry	yes	no direct effect	no transfer	yes
indexing	yes	Land Title Registry	-	no direct effect	no direct effect	no
registering	yes	LTR	yes	transfer on booking	no transfer	yes
issuing	yes	LTR	yes	proof for next transfer	problems with next transfer	??

Figure 6.8; Tasks and questions of the Ghanaian title system of land registration

6.4.5 Concluding Summary

support of the land market

Land registration should never be considered a means by itself. It exists to serve among others the land market. According to Woodman (1988: 130) Simpson asserted that title registration is relevant and required only in a free-enterprise economy, which –according to Simpson– is the sort of economy that goes back to the dawn of civilization when man first began to grow his or her own food and wanted 'security of tenure' in the land he or she had cleared. Although the Ghanaian economy can more and more be seen in that light, the land registration situation does not seem to meet the challenge of such an economy.

are there problems with unregistered land?
“Originally all rights were derived from allodial titles acquired in the distant past as a result of events not recorded in writing. The customary law freehold usually depended on the fact of occupation of the land, often long ago, by the person through whom the present holder claimed. All customary-laws and some common-law transfers were by oral transactions.” (Woodman 1988: 212) “Security of tenure is a question of fact and as a fact it can exist whether there is documentary evidence to prove it or not" (Kumah 1988: 1). But, as Kumah (1988: 24) observed, the traditional systems of land holding can not give the security of title they used to give in the past when communities were close-knit and publicity through the performance of some symbolic act before witnesses was sufficient evidence of transfer of land. Due to changing social, political and economical systems, communities become complex and writing replaces mere oral enquiry to prove title. Due to the constant changes of the membership of the public, memories grow dim and tradition becomes susceptible to distortions and transactions become difficult to determine with time.
And though the customary tenurial systems appear to be open, equitable, flexible, accessible and less expensive (at least to most locals), they are currently characterized by lack of written records, of basic data concerning transactions and of permanent boundary indicators, which has led to land disputes, litigation and related problems in certain areas, especially in the southern part of Ghana (Kasanga 1991: 37). Nevertheless Kasanga also mentions that the results of questionnaires in three diverse areas indicated that even though interests in land are not in writing, the interests held by various people are not in doubt (Kasanga 1988: 57).

In the cases of doubt about who has an interest in the land, this is partly due to the unauthorized disposal of land by chiefs, individuals or family heads resulting in disputes with the rightful authorities for repossession (Kasanga 1991: 97). Kasanga mentions that the results of questionnaires in three cities indicated that still many people are not aware of the need to inquire about the ownership of the parcel of land at the Lands Commission, although there is evidence of chiefs even selling government land to customers (Kasanga 1991: 98-99).
These serious problems especially arise when the traditional community is ‘overrun’ by development. Examples of this can be seen with many agricultural modernization projects, like irrigation projects. Because of lack of communication between the indigenous people and the formal sector planners, the former did not use the irrigation facilities. So the government brought in commercial farmers from elsewhere, which led to conflicts (Kasanga 1992: 12). For land that was taken away almost no compensation was paid. The money that was paid was only for crops and houses, and it was often paid to the chiefs (who had been introduced here by the British). (Kasanga 1992: 13) Another example is the fact that insecurity of title to land is high among developers (Kasanga 1991: 144).

can the present land registration activities solve these problems?
"Land administration in the country has been the subject of intense criticism in recent times, greater focus being on the Public Land Sector. The lack of transparency in administration, inefficient data capture, storage, manipulation, and the lack of effective linkages with relevant institutions have given rise to criticism." (Adusei 1996: 2)

The answer seems to be rather negative. The Land Registry Act has not been successfully implemented because of the excessive bureaucracy in the process of deeds registration. Whereas it was the purpose of the act to prevent land disputes, the fact that people were often not registering their instruments made it impossible to reach this goal. (Naana Amakie

1993: 173) Some of the process' biggest shortcomings are that it is often slow and costly and above all it is not conclusive. For every deal, a different lawyer is involved. He or she needs to repeat the investigation to satisfy him- or herself that the title is sound. The efficacy of the investigation, and the title itself will depend on the skill and integrity of the lawyers. These lawyers demand –and indeed deserve– a substantial fee. (Kumah 1988: 2). Nevertheless it is not unusual to own a paper title without having access to the land itself (Kumah 1988: 41).

The attempt of the Conveyancing Decree 1973 –a reproduction of the Law of Property Act (England) 1881– to simplify documentation, has been thwarted by the conservatism of the lawyers in the conveyancing practice (at least in Ashanti). Clients have to sign documents which contain technical expressions they hardly understand. They incur unnecessary expenses in relying on lawyers to draw up documents to effect their transaction, not to mention the amount of time they waste (Minnah-Donkoh 1990: 93).

Thus land acquirers frequently decline to register their acquisition. Registration is sought by those seeking credit (commercial banks demand it) or greater tenure security than they believe is possible under customary tenure arrangements. Also persons requiring permits or similar services from the government may have to register, as for example in the case of a petrol station that cannot sign a contract with a fuel wholesaler unless the commercial property is formally registered. Such cases usually concern members from the elite, who pay a nominal ground rent once the lengthy and costly registration process has ended (Kasanga et al 1995: 1 and 12).

All in all the system of land registration, the Land Registry Act 1962 set out to achieve, has not emerged in practice in Ghana. Because of this, and the long standing concern over the relatively large number of land litigations in court, an atmosphere was created to go for a radical change. Instead of gradually repairing the obvious flaws in the existing system, which could be found most prominently in the technical, but also in the organizational and legal aspects, the Ghanaians decided to introduce a whole new system of land registration. This resulted in the Land Title Registration Law 1986, which lays down the foundations of this new system.

Unfortunately the implementation of this law has run into quite some problems as well. Instead of checking and converting the information already available in the deeds registration onto a (provisional) register, they started out with 're-titling' the declared registration districts, as if nothing had happened in the past. Although the preparation of registry maps, which form the geometrical base of the title registration, has had a very slow start, the frequency of declaring new registration districts is quite high. Several mistakes have been made, including issuing two title certificates for one parcel (due to the mapping problems) and issuing title certificates for public lands and to dishonest people abusing the lack of cooperation with the Lands Commission.
All in all the process of title registration is more cumbersome than is claimed. An applicant has to go through a lengthy process of registration. The registration exercise is also constrained by lack of logistics and personnel. (Larbi 1995: 61) But the problems go beyond logistics and funding. The implementation of the title registration is largely based on the Kenyan model, where individual title certificates are used, which are not necessarily the best starting point for compulsory title registration among a predominantly illiterate population, governed largely by customary land law. Given the realities of the customary land holding patterns, the registration exercise should have started with the 'allodial' land

holdings, down to the village and individuals. (Kasanga 1996: 17-18)
The only reasonable conclusion seems to be that the optimistic view that title registration takes the whole activity away from bureaucratic red-tapism to commerce where the concept of profit dominates (Asante-Asong 1981: 72) is not valid in Ghana (yet). And this should not be all that surprising, when we see Kumah (1988: 84) say that the study of the history of registration shows that the difficulties that have so frequently been encountered in the successful establishment of this obvious and common sense record have been caused by defects in, or handicaps to, the daily working of the service, not to any extraneous disturbing conditions, and certainly not to fraud. And although the LTRL might be a nice piece of legislation as such, its introduction did not repair such defects and handicaps, and new ones were even introduced with its implementation (like not using information and knowledge available at the Lands Commission/Deeds Registry). Kumah (1988: 92) also informs us that the experiences with introducing title registration in developing countries have not been encouraging. In his mind, however, there was no alternative, except confusion in land affairs. The author disagrees with the latter statement, and he is convinced that a gradual improvement of the deeds registration would have been a better choice. When saying this the information at the Lands Commission's Records Room is counted as a part of the deeds registration, and do not limit it to the 'archives of instruments' at the Deeds Registry (also Zevenbergen 1998a).

One last issue remains. With the implementation of the LTRL the Ghanaian legislature chose not to change the substantive land law as such[83], but to introduce 'Land Title Registration without Prejudice'. This way they embodied customary tenure into statutory law. Kasanga et al (1995: 55) calls this commendable, even when he indicates that many of the legal problems cited earlier could be easily dealt with by legal and regulatory reforms. However, by this choice they only sought to remove one of two types of uncertainties, as distinguished by Woodman (1988: 127): "In the absence of title registration a system of land tenure may contain uncertainties as to various particular facts, primarily the identities of interest-holders, the types of interests they hold and the boundaries of parcels. Apart from those uncertainties a system of land law, and particularly it is alleged, a system of customary land law, may contain uncertainties as to various general laws, such as those which stipulates the rights exercisable by the holder of a certain interest in the land whenever it exists. Uncertainties as to facts are sought to be removed by title registration; uncertainties in the laws by codification."
It is generally accepted that codification of customary law will lead to at least some substantive changes, a fact that is regularly mentioned as a disadvantage of land registration (as codification of the land law is often a part of the same operation). By making the LTRL as it is, Ghana avoided this. Nevertheless in practice one can see quite rapid changes in the land law in Ghana. As the customary law would have done in the past, the land tenure system keeps adapting itself to changing societal and economic needs of the country. Codification could be a step in that process as well, as long as the outcome is a well tailored tenure system for this country.

final remarks
It is not easy to study land registration in Ghana. It consists of two rather different, co-existing systems, which each on its own looks reasonably consistent, but the practices of

[83] According to Aidoo (1986: 124) this is different from the Torrens system, which is often governed by a radically different code of substantive law from that which relates to unregistered property.

which are quite different. In a growing number of places throughout the country the lack of registered land is causing problems, but still many people do not see the present land registration activities as a useful means to solve these problems.
The most serious problem is the mentality and the knowledge of the staff involved in land registration, and the lack of cooperation between the different organizations. Also the procedures for a transfer under the deeds registration (concurrence/consent combined with registration) and first registration under the title registration are complicated, including all kinds of checks which only partly deal with land registration as such. Long process periods, high costs (due to informal fees in addition to formal fees) and a lack of real benefits from the result in their minds (partly because of unawareness and partly because of lack of real disadvantages in practice for non-registration) will keep many people from registering.
The government of Ghana seems to be aware of these problems and is –with some aid from the World Bank– trying to alleviate several of the problems in the present titling exercise. However, there is no guarantee that this will be successful in the short run, since there still is lack of equipment, qualified staff and both public and staff lack the incentives to go 'the extra mile' to make the system work.

A short look at the situation with regard to the technical, legal, and organizational aspects gives the following picture.

The technical aspects are inadequate. Most of the work is done with traditional ground surveys and the especially the rapid developments seem to make the usefulness of using photomaps in the title exercise very limited. The latter is worsened by the fact that the aim of the surveying and mapping activities seems to be the use of fixed boundaries, even though general boundaries are quicker, cheaper and clearly allowed by the legislation.

The legal aspects are mediocre. The land tenure law is unclear, and apparently there is no intention to change this in the short run. The registration laws (LRA and LTRL) are basically sound, but are either not completely enacted, or not completely obeyed. Oral customary transactions still seem to happen and are usually accepted by the courts.

The organizational aspects are inadequate. Although all government land registration functions fall under the Ministry of Lands and Forestry, the coordination and cooperation between the Lands Commission (incl. the Deeds Registry) and the Land Title Registry is extremely strained in Accra (seems to be better in Kumasi). Although fewer problems seem to exist between the Survey Department and the others, all organizations are very much involved in their own work, without really looking at the larger picture of land administration as a whole. But even within each of the land administrating organizations, the state of the knowledge and mentality of the staff has led to a mediocre administrative system, that is not efficient and only partly effective. The public does not really see land registration as the solution for their land tenure problems.

6.5 Concluding Remarks

In § 5.2.1 (and already in § 1.3.3) the following questions per case are listed:

- How are the legal, technical, and organizational aspects of land registration taken care of in each of the selected countries?
- What is the interrelation of these aspects in these countries?
- Does this give an effective functioning land registration to these countries?
- Which more general conclusions can be derived from this?

For each case as such the first and second questions are largely answered in the description of the cases, whereas the more analytical answer to the third questions is to be found in the concluding summary, which also gives some indications with regard to the fourth question.
In this paragraph we want to look at these questions in a more comparative way.

6.5.1 A First Comparison of the Cases

Comparing the findings of the four cases gives a rather grim picture. The two so-called Western countries have effective systems of land registration, which support quite active land markets. The two developing countries are only partly covered by systems of land registration, which do not work very well. In areas where the customary laws are dominant, there usually is little problem with tenure security, until so-called development overruns such an area (compare van der Molen 2001: 7-8, Otto 2000: 13). Some basic information of the four countries and their systems of land registration is represented in the table in Figure 6.9.

	the Netherlands	Indonesia	Austria	Ghana
inhabitants (in millions)	15	195	8	18
parcels (in millions)	7	54[84]	11	unknown
area not registered	-	91%	-	70%
area under ‘deeds’ (%)	100%	-	<1%	30%
area under ‘title’ (%)	-	9%	>99%	<1%
area with index map (%)	100%	<5%	100%	<5%
relation map & registry	combined	combined	separated	separated
type of surveyor	‘governmental’	governmental	private	private
use of notary or lawyer	obligatory	obligatory[85]	partly obliged	important

Figure 6.9; Some basic information of the four cases

[84] Estimated for the non-forest areas (30% of the country). Of these 16 million are registered (30% of the non-forest area, 9% of the country).

[85] A deed has to be drawn up by a land deed official, who usually is either a head of sub-district or a notary.

Even the two Western countries do not bring us to the ideal system. The Netherlands have a rather efficient system, which does not strive for 100% solutions in its laws. But the fact that it is working well is grown out of a long history, which had its ups and downs. The Austrian system might be very safe from a purely legal perspective, it is overburdened by bureaucratic procedures and many, often small offices. Both do, however, make good use of modern (information) technology, which makes it possible for the different players to co-operate even better than before. For both countries the fact that the main functions are combined or closely coordinated make the system work well.

6.5.2 Cross Case Analysis

To be able to look back at the preliminary hypotheses presented in § 5.2.1 we need to depict the situation in each country with regard to the technical, legal, and organizational aspects. This is done in the table in Figure 6.10.

	the Netherlands	Indonesia	Austria	Ghana
technical	modern, very good	scattered, inadequate	modern, extremely well	unclear, inadequate
legal	simple, good	incomplete, mediocre	refined, extremely well	complex, mediocre
organizational	sound, very good	unclear, inadequate	cooperative, satisfactory	uncooperative, inadequate
trustworthiness	very good, straightforward	very weak, evasions accepted by courts	near perfect, at times overbearing	weak, informal evasions

Figure 6.10; Qualification of aspects of the four cases

Although it was clear from the start of this study that the technical, legal, and organizational aspects are interrelated, the interrelations turn out so intense, that it is very hard to qualify the types of aspects separately and without taking the overall 'trustworthiness' into account. For instance the inadequacy of the Ghanaian technical aspects is to a large extent caused by the unclear practice with regard to the licensed surveyors. The fact that the regulations that ask for approval of the survey work under the deeds system are often ignored and that licenses are rarely revoked (or granted), belong primarily to the 'daily practice vs law in books', one of the organizational aspects. The fact that the licensing regulations put the sole responsibility for issuing and revoking licenses with the Director of Surveys is more a legal aspect that calls for improvement. Therefore for Ghana all three types of aspect are negatively influenced by this situation, as is the overall 'trustworthiness'.
Similarly the impact of the daily practice (vs. law in books) as one of the organizational aspects, make the qualification of the organizational aspects follow the overall success of the system. From the theoretical point of view we should have the functions of the system of land registration performed by as few organizations as possible. That would mean that the qualification of the Austrian organizational aspects would be rather low. Nevertheless in daily practice it works fine, maybe even beyond what one would expect from the 'law in books'. Obviously this means that both the organizational aspects and the overall 'trustworthiness' will be qualified very positively.

Two findings can be made here. Firstly the interrelations between the three types of aspects that are distinguished within this study are even stronger than expected beforehand. Secondly the distinct aspects classified here as 'organizational aspects' are too different to be put under one heading. At least the institutional arrangements should be seen separately from the administrative practices. Since the level of cooperation between those involved in different functions, and even tasks, clearly seems to be more important than the level at which their units have a shared head, we possibly need to differentiate between the institutional framework and the level of cooperativeness. Based on these two findings we can conclude that usefulness of trying to classify systems of land registration along the lines of their technical, legal, and organizational aspects is about as limited as using one of currently used classifications described in chapter 3.

Although the above limits the value of the hypothesis described in § 5.2.1, we will test them here. Each hypothesis is given, followed by a short analysis, ending in its acceptance or rejection.

(1) When the organizational and technical aspects are well taken care of, weak legal aspects can be overcome.

This is based on the way the situation in the Netherlands, especially as it was before 1992, is perceived. The pre 1992 situation as such was not part of the case study, but it is clear that the Dutch system of land registration reached its present state through gradual improvements, in which the legal aspects lagged behind. Good organizational aspects (with both rather unified institutional arrangements and sound administrative practices) and good technical aspects (index maps and use of technology) are very visible, whereas the (theoretical) legal weaknesses do not really play a role. But the number and severity of these (theoretical) legal weaknesses has been so reduced since 1992, that we can no longer classify the legal aspects in the Netherlands as weak. None of the other cases really relates to this hypothesis.

Purely based on the case study we can neither accept or reject the hypothesis.

But one can still read in the Dutch case study, the lesson that with good organizational aspects (both regarding institutional arrangements and administrative practices) and good technical aspects (index maps and use of technology), some (theoretical) legal weaknesses can be overcome.

(2) When the technical and legal aspects are well taken care of, bad organizational aspects will still be a great problem.

This hypothesis was beforehand based on a situation presumably to be seen in many countries, where lawyers run a purely descriptive land registry completely independent of (land) surveying activities, e.g. for the (fiscal) cadastre. No country really matching this profile was studied as one of the cases. A cadastre in the Napoleonic sense is only present in the cases of the Netherlands and Austria. In the Netherlands the organizational aspects are better taken care of than the legal ones, so it does not match this profile. Austria does have a system with very good technical and legal aspects, and overall has a well running system. If one would limit the organizational aspects to the number of organizations involved, Austria would score badly on that, thus rejecting the hypothesis. But when the

organizational aspects focus on the level of cooperation and/or the administrative practices Austria scores well on these, and no longer relates to this hypothesis.

Purely based on the case study we can neither accept or reject the hypothesis.

One can read the lesson in the Austrian case study, that with good levels of cooperation and sound administrative practices the number of organizations involved is no real issue.

(3) When the legal and organizational aspects are well taken care of, bad technical aspects can be overcome.

This hypothesis was beforehand based on the situation in many Anglo-Saxon and Commonwealth countries, where often no coherent cadastral mapping exists (except for England and Wales where coherent topographic mapping is used), and still the legal protection can be regarded as well taken care of with the legally sound Torrens-system. None of the countries studied turned out to really match this profile. In Ghana, being part of the commonwealth, only almost 10,000 titles had been issued under the relatively new title registration system, which even has its legal and organizational weaknesses. When implemented according to the law this system should include a good index map (the registry map). The Indonesian system of land registration is regularly called a ‘modified Torrens system’. But in addition to several legal and organizational weaknesses, the lack of index mapping for parcels which were brought sporadically onto the register has caused serious problems with ‘floating’ parcels.

Purely based on the case study we can neither accept or reject the hypothesis.

One can read the lesson in the Indonesian case study, as well as in the Ghanaian one, that good index mapping, even with limited surveying accuracy, is essential when introducing a system through sporadic adjudication.

(4) Whereas flaws in technical or legal aspects can be overcome when the other two aspects are well taken care of, flaws regarding organizational aspects will quickly render the land registration inadequate.

The fourth hypothesis comes from combining the previous three hypotheses, from which we could not draw clear conclusions based on the case study.

Based on the case study we can neither accept or reject the hypothesis.

We could repeat the lessons that good cooperation between persons and organizations involved (an organizational aspect) and good index mapping (a technical aspect) are important from the previous hypotheses. From the case study as a whole the importance of getting all transfers into the system through having enough incentives (mainly a legal aspect) and having not too many disincentives (related to both organizational and legal aspects) can be added. These lessons combined include all three types of aspects and would seem to support the view that to a certain level all three types of aspects have to be tackled adequately to have a well functioning system of land registration.

6.5.3 Other Findings

It is very useful to describe the systems of land registration along the lines of the different technical, legal, and organizational aspects. It is, however, not very useful to give qualifications to each of the three types of aspects as such (see § 6.5.2). This is caused by both the fact that they are even more interrelated than expected, and by the fact that too many different types of aspects are treated as belonging to one type (this holds esp. for the organizational aspects).

More than expected beforehand it is very useful to give an overall qualification of a system of land registration by its trustworthiness. This fits very well with the concept of emergent properties in the systems approach. The fact that such an emergent property of a system of land registration comes up so clearly also strengthens the boundaries that were chosen between the system of land registration and its environment.

As was expected it is clear that a (modern) system of land registration only contributes to an increased security of the (legal) tenurial relations between persons and land, when these relations are rather individualized and regularly traded (thus when a land market exist). The added value of the system increases a lot when other preconditions for lending money are also created, allowing use of the system for securing loans through mortgages. In areas where the customary laws are still dominant, there usually are little problems with tenure security. But when such areas are overrun by so-called development, often the customary system breaks down. Partly because of the interference of the (national) statutory system, and partly due to the increased pressures of the higher scarcity and/or value of the land. In most countries where this is happening, the system of land registration is not able to quickly and smoothly take over securing land tenure is such areas.

It is also noticeable that once the system of land registration reaches a certain level of trustworthiness, there is little chance of major improvements, at least with regard to legal and organizational aspects. Introduction of new technology is a more or less ongoing process in the cases of the Netherlands and Austria.
Further (theoretical) legal improvement by introduction of title registration in the Netherlands has been explicitly rejected on the base that the work involved would be too great for the limited additional gain (compare Zevenbergen 1996). In Austria strong (legal) opinions exist with regard to combining several land registration functions into one organization. Since the present organizational fragmentation causes no problems due to good cooperation and use of a joint database, there is also no need to challenge this, even if it might increase efficiency a bit.
This is clearly in line with what can be expected at North's second level of markets, being the 'political markets' (see Zevenbergen 1999 and § 1.2.3). There will be less incentive in that market to change (further improve) the system, when the present system does not really cause serious problems. With such a level of trustworthiness, the chances for introducing legal intricacies are small.

When a difficult and bureaucratic formal procedure can be avoided by using a lighter, but still formal, procedure, the latter will be used in most cases. An example can be found in the avoidance of using the real property right of *Baurecht* for owning a building on someone else's land. Instead people often use the right for temporary constructions with a lighter, less bureaucratic procedure, called *Superädifikate*. Interestingly we see virtually the same situation in Indonesia where *Hak guna-bangunan* is avoided because of the bureaucratic

procedures, and the non registered *Hak sewa* is used instead. This way the advantages of staying in the formal institutional framework can still be kept, because an alternative formal procedure was available. In many cases where such a lighter, formal, procedure is not present, informal ‘procedures’ are used or even created within communities. But in the latter case the advantages of the formal institutional framework as described by North (1990; see § 1.2.3) are missed (like transacting over large distances with previous unknown parties).

7 CONCLUSIONS AND SUMMARY

This chapter contains the main conclusions that can be drawn from the previous chapters. In § 1 we look back at the research questions and study's question and answer these in the form of a concluding summary.
In § 2 several other findings will be given. These are partly directly drawn from the case study (compare § 6.5), and partly from the study overall. Although some of them might not be surprising –even look as 'open doors'– presenting them here is still felt useful, as they are the author's personal findings after this study. It also re-iterates their importance for studying and designing systems of land registration. Some findings relate to land registration as such and some to the more theoretical aspects of (studying) land registration.

7.1 Concluding Summary

Here the study's question and the research questions formulated in § 1.3.2 will be answered. Since the final answer to the study's question is based on the answers to the research questions, the latter will be dealt with first.

7.1.1 Answers to the Research Questions

Each of the chapters 2 - 6 is based on one of the research questions. After repeating the question, the main line of the answer given in the chapters is given here.

A. What is land registration and how has it developed?

This question is answered in chapter 2, following the line of (historical) development. Large parts of this line can be found through time in most countries.
Land registration can be described as "the process of recording legally recognized interests (ownership and/or use) in land" (McLaughlin/Nichols 1989: 81). It links together the owner, right (title) and parcel (see Figure 2.1). Four types of transaction evidence can be identified (oral agreement; private conveyancing; deeds registration; and title registration). Only the last two really constitute land registration (see Figure 2.2).
Units of land have to be made separately identifiable in one way or another, e.g. through the use of cadastral or index maps and identifiers (see § 2.2.5).
Although often the emphasis is on the differences between the systems in different countries, several often used principles and features exist. An important list of principles consists of the speciality, booking, consent and publicity principles. An important list of features includes security, simplicity, accuracy, expedition, cheapness, suitability to its circumstances and completeness of the record. These features can be said to reflect the expectations society has of a system of land registration. The are summarized in the 'trustworthiness' of the system.

B. What classifications of (parts of) systems of land registrations are used, and how usable are these?

This question is answered in chapter 3. In addition to the (overused) classification in title registration vs deeds registration, six other classifications are covered. They are negative versus positive systems; race vs notice statutes; parcel identification systems; fixed vs general boundaries; systematic vs sporadic adjudication; and organization of registry and cadastre. At best the classifications can be used to classify a sub- or aspect system of the system of land registration. But even for such part systems it only supplies a one-dimensional classification, where usually a multi-dimensional array of attributes, each of which can have different occurrences, would be needed to fully describe the different systems that can be found world wide. Projecting such complexities into a one-dimensional classification is bound to lead to the almost emotional discussion that sometimes springs up around title vs deeds and fixed vs general.
In the end the differences are mainly caused by how the system deals with differences between the abstract concept and the 'reality on the ground'. Ultimately it is more important that the system has clear rules for the most apparent cases of such differences, than how these rules read.

C. What is the systems approach, and how can it be used to (conceptually) model systems of land registration?

Within the systems approach systems are primarily studied as a whole. For this study a system is a set of *elements* together with *relationships* between the elements and between their *attributes* related to each other and to their *environment* so as to form a *whole* that aims to reach a certain *goal*. Each of the italic terms is explained and applied to systems of land registration. The system as a whole is characterized by emergent properties, of which the trustworthiness of a system of land registration is a clear example.

Figure 4.5; The system of land registration abstracted as an input - output model

Land registration is presented as an open system, and is depicted as a 'black box' in an input - throughput - output model. In the context of this study as input into the system the (factual) land tenure situation and as output the legal security are chosen (Figure 4.5).

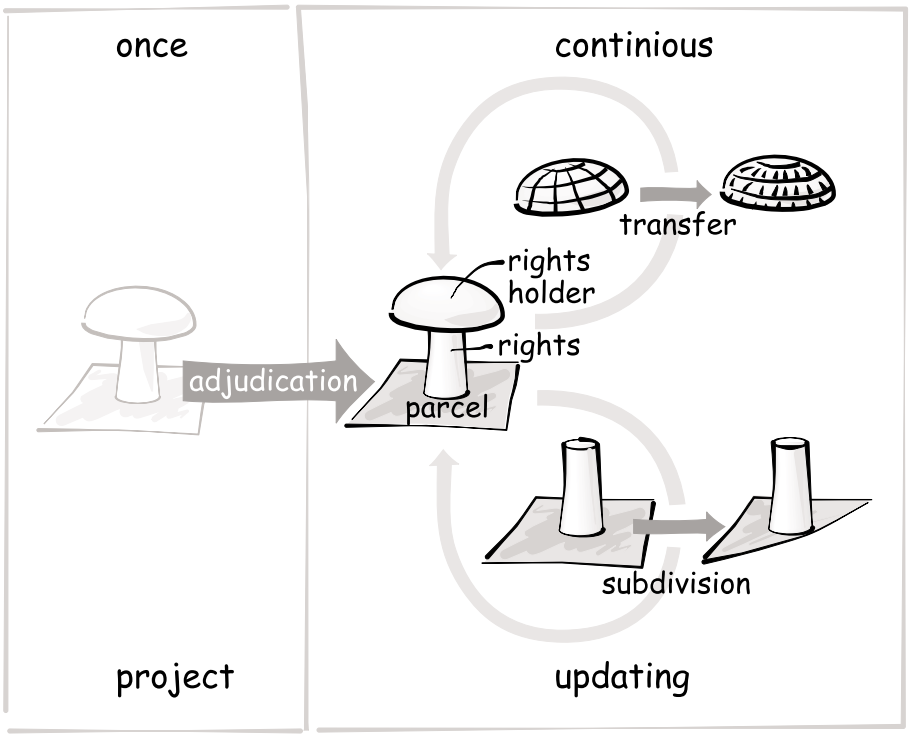

Figure 4.8; Dynamic model of the system of land registration ('mushroom' encompasses the static model)

For describing land registration both the static and dynamic system are useful. The static system concentrates on describing which information is kept and how. It re-iterates the link of owner, right (title) and parcel (see Figure 2.1). The dynamic system concentrates on the three functions of adjudication, transfer of whole parcel and subdivision. Whereas the first one is a once occurring activity (project), the other two are a continuous process (updating), as can be seen in Figure 4.8. The two updating functions are further broken down into a

list of tasks, most of which are present in any system. For each task a number of questions are formulated. This leads to a table (see Figure 4.11) which can be completed for any system (this is done in chapter 6 for each case).

The modeling results should be seen in a proper perspective. In the first place it is a first attempt in this direction. In the second place the models concentrate on the technical, legal, and organizational aspects, leaving the social-cultural and financial-economical aspects out of the heart of the model. In the third place any study, and certainly a case study, is biased to the cases studied, which in this study do not represent all important groups of land registration types to their full extent. Therefore further study to improve the models would be recommendable.

D. Why is case study research the most appropriate methodology for this study, and how is it undertaken in a 'rigorous' way?

Case study research is very appropriate for investigating a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident. It also conserves the interrelation between the relevant factors. This is very useful for studying systems of land registration, for which the boundary between the system and its environment is not always clear beforehand, and in which the interrelations between the different elements and aspects are expected to be very strong. Undertaking a rigorous case study starts with studying methodological literature on case study research (esp. Yin 1994). It is important to carefully make a research design and a case protocol before looking into the case(s). We can say that doing research is making choices. It is important to make these choices deliberately and describe them. A good design and protocol will help to keep the focus when there is the risk of being carried away in looking into a case by very interesting, but not to the point, information. The research design includes hypotheses on how the different types of aspects interrelate.
This study is set up as a multiple case study, involving four cases. These cases are the systems of land registration of the Netherlands (1995), Indonesia (1996), Austria (1996) and Ghana (1997). These cases were selected to achieve maximum variance, especially with regard to five predefined characteristics (see Figure 5.2). Each case report is written along the lines of a predefined structure, based on the technical, legal, and organizational aspects of land registration.

E. What are the (main) results of the cases studied (for each case and combined)?

The results of the four cases are laid down in separate case reports. A short overview along the lines of the processes and the aspects is presented in this report. The main conclusions per case are also given, as are the tables of the tasks that have to be performed in the dynamic system of land registration to fulfill the two updating functions of transfer and subdivision (see Figures 6.1, 6.3, 6.5, 6.7 and 6.8).

The main result is that the systems of land registration in Indonesia and Ghana have only limited impact throughout the country and can not be regarded as very trustworthy. The systems of the Netherlands and Austria clearly support functional land markets. The cases do not really make it possible to accept or reject the hypotheses formulated in the research design (see under study's question).

Taking the system of land registration as the primary systems level is very useful in this study, which focuses on land registration for providing legal security to the owner and purchaser. The system of land registration clearly shows the emergent property of trustworthiness, which can not be attributed to any of its part systems. Although it is hard to quantify, it is not very hard to get a qualitative feeling about the question if a society (which could be a part of a jurisdiction) trusts in the system or not.
One should, however, not forget that a trustworthy system of land registration is not the only prerequisite for an active land market (e.g. financial infrastructure allowing for mortgages is needed as well). When the land market is the topic of a study, land registration should be viewed as a subsystem, and the primary systems level should be higher.

7.1.2 Answer to the Study's Question

Now that the research questions have been answered, answering the study's questions is feasible. The study's question reads:

> How do the technical, legal, and organizational aspects and their interrelations affect the way a system of land registration is able to provide adequate legal security to owners and purchasers of real property within a given jurisdiction?

A part of this question led to the hypotheses presented in Figure 5.1 which looked at the interrelated impact of the quality of the three types of aspects. The cases do not supply the information needed to accept or reject the hypotheses formulated in the research design, although they contain some indications that the hypotheses might hold, and –thus– that the organizational aspects would be the most important in making a land registration "go 'round". The interrelations between the different types of aspects turn out to be even greater than expected. Furthermore the aspects grouped under organizational aspects are so different that they can not really be given one joint qualification. It can be concluded that the hypotheses are based on too small a number of dimensions to be able to accept or reject them based on the cases studied.

The study's question already implies that the technical, legal and organizational aspects have effect on the system of land registration and on it achieving its goal(s). The same goes for the interrelations between them. We can conclude that the interrelations are even stronger than expected beforehand.
The subsystems that can be seen as being part of land registration, as well as the functions needed to fulfill land registration, may –to a certain extent– be described and experienced as the domain of one aspect system (lawyer, surveyor, IT-specialist). Nevertheless aspects of other aspect systems are always influencing the constraints and possibilities (like the use of new technologies which depends on the way the survey regulations are phrased and on the financial and human resources available to acquire and use them). A description based on one type of aspects should therefore always be viewed with the overall system in mind. This study provides (conceptual) models of this overall system of land registration, which could help those studying part systems of land registration to put their results into the right perspective.

In the end the daily practice, for better or worse, determines to a large extent if the system achieves its goal(s) and if it can be trusted. What can be considered a less than perfect theoretical solution –if that can be agreed on– from a technical, legal or organizational point

of view, might work in practice. Examples are index maps[86], deeds systems[87], and separated registries[88]. The opposite, bad daily practice of a theoretically sound solution, can also be found quite easily. Especially worrying are the cases where one part system or function is theoretically perfected, whilst leaving the rest of a weak system of land registration as it is. This happens when a project to improve or reform a system has too narrow a focus (e.g. mechanizing the existing tasks with computers), or when the project has not been prepared on the basis of a wide enough (case) study into the existing situation[89]. The latter resembles the situation where a system –or elements of it– from one country are 'parachuted' into another country. The realization that such an approach is not appropriate is expressed by virtually all authors on land registration and cadastre, but it still seems to creep into the design and especially implementation of many projects. None of us can escape our primary training and field experience, which is usually limited to one or two countries.

In the study's question a system of land registration has to provide adequate legal security to owners and purchasers of real property within a given jurisdiction. In this study this is not measured in any quantitative way, but eventually expressed by the system's trustworthiness. This trustworthiness of the system of land registration, is a so-called emergent property of that same system. An important characteristic of emergent properties is that they can not be reduced to adding up attributes of elements. Therefore there is little use in distinguishing the aspects, and interrelations between them, of a system of land registration in the context of this study's question. Thus the answer to the study's question could be said to be *"together as a whole"*; highlighting the usefulness of the systems approach for the topic at hand. This means that the appropriateness of the *combination* of (solutions of) subsystems or elements and interrelations far outweighs the individual solution chosen for any specific subsystem or element. The damage from one weak link, far outweighs the benefits from another link that is made extra strong. Although any comparison only partly holds, it can be described as "the chain is only as strong as its weakest link".[90] Unfortunately we do not know (yet) how to measure the strength of each link in a comparable way[91], and perhaps the comparison should be with a cord of many strands, in which a weaker spot in one strand could be covered by enough strength in the

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[86] For instance graphical cadastral maps (like in the Netherlands, much of Austria) or maps derived from medium scale topographic maps (like in the Ghanaian 'records room', but also on the British Isles), instead of precise and controlled registry maps or numeric cadastral maps (like the Austrian boundary cadastre, but also the Australian Torrens' systems).

[87] For instance deeds systems in the Netherlands, South-Africa and the Scottish Register of Sasines, instead of title systems (like Austria).

[88] For instance the land book courts and survey departments in Austria (which cooperate well), instead of combined agencies (like the Netherlands, but also Slovakia, Hungary and the Czech Republic).

[89] Compare Williamson/Fourie 1998 and Barry/Fourie 2002, who say "Too often situations are oversimplified for technical project management purposes leading to incorrect decisions and quick fixes. This is especially true in developing countries undergoing change." (Barry/Fourie 2002: 25).

[90] Compare Otto (2000: 10), who says the same with regard to legal systems in general.

[91] The studies on performance indicators and benchmarking are working on this.

other strands. All in all, only pulling the whole chain or cord will tell us its strength, *ergo* the trustworthiness of the system of land registration.

The answer to the study's question is:

> *The interrelations between the technical, legal and organizational aspects are so strong, that –in the context of this study– only the overall effect can be determined through the level of trustworthiness, and we thus have to assume that the aspects affect the system fulfilling its goal together as a whole.*

7.2 Other Findings

In addition to the just given exposé on answering the research questions and the study's question, other findings came up during this study. Partly these are directly drawn from the case study (also see § 6.5), partly from the study overall.

7.2.1 Case Study Results

short impression of the cases
The two so-called Western countries have effective systems of land registration, which support quite active land markets. But they do not bring us to the ideal system. The Netherlands have a rather efficient system, which does not strive for 100% solutions in its laws. But the fact that it is working well is grown out of a long history, which had its ups and downs. The Austrian system might be very safe from a purely legal perspective, it is overburdened by bureaucratic procedures and many, often small offices. Both do, however, make good use of modern (information) technology, which makes it possible for the different players to co-operate even better than before. For both countries the fact that the main functions are combined or closely coordinated makes the system work well.

The two developing countries are only partly covered by systems of land registration, which do not work very well. In areas where the customary laws are dominant, there usually is little problem with (internal) tenure security for those acknowledged as part of that community. This changes when so-called development overruns such an area. Often the customary system breaks then down, partly because of the interference of the (national) statutory system, and partly due to the increased pressures of the higher scarcity and/or value of the land.
The impact of the land tenure systems on the legal security for owner and purchaser in these countries turned out to be underestimated in the case design of this study. The existing dualism of the land tenure system, as well as the ongoing struggle on how to deal with it[92], causes so much complications and insecurity in countries such as Indonesia and Ghana, that this overshadows the data on the rather 'technocratic' approach of studying technical, legal, and organizational aspects of systems of land registration there. Based on this it is recommended that multiple case studies with study's questions of a related kind should be primarily confined to more comparable jurisdictions.

strong interrelations
As mentioned and explained in § 6.5, the interrelations between the studied aspects turned out to be even stronger than expected beforehand. Furthermore too many distinct aspects were classified under 'organizational aspects'.
This made it very hard to qualify each type of aspects separately and without taking the overall success into account. This re-iterated the need to study a system of land registration as a whole, giving an overall qualification through the emergent property of its trustworthiness.
This made it also not really possible to formally accept or reject the preliminary hypotheses. Nevertheless the following lessons can be read into the cases studied:

- with good organizational aspects (both regarding institutional arrangements and administrative practices) and good technical aspects (index maps and use of

[92] For a description of such problems in Sub-Saharan Africa, as well as an appropriate tenure and required registry model see Mulolwa 2002.

technology), some (theoretical) legal weaknesses can be overcome (the Netherlands);
- with good levels of cooperation and sound administrative practices the number of organizations involved is no real issue (Austria);
- good index mapping, even with limited surveying accuracy, is essential when introducing a system through sporadic adjudication (Indonesia and Ghana);
- all transfers need to go into the system, and therefore there have to be enough incentives and not too much disincentives (overall).

Therefore it can be concluded that to a certain level all three types of aspects have to be tackled adequately to have a well functioning system of land registration.

'political market'
It was also noted that once the system of land registration reaches a certain level of trustworthiness, there is little chance of major improvements, at least with regard to legal and organizational aspects. Introduction of new technology usually is a more or less ongoing process. This is in line with what can be expected at North's second level of markets, being the 'political markets' (see § 1.2.3). There will be less incentive in that market to change (further improve) the system, when the present system does not really cause serious problems. With such a level of trustworthiness, the chances for introducing legal intricacies are small.

evasive action
When a difficult and bureaucratic formal procedure can be avoided by using a lighter, but still formal, procedure, the latter will be used in most cases (even in Austria). In many countries even when no lighter formal procedure exists people avoid the difficult one by informally transacting.

never confine case study to the capital
Systems of land registration virtually always encompass more than one organization. In most jurisdictions these organizations will have regional and/or local branch offices. A good case study should never be confined to the offices in the capital city, but also include (other) branch offices. Often the competition and power struggles that can be found in the capital city are not present elsewhere. In any case there is likely to be a difference in the economic, social and other characteristics.

application of methodology
Studying a complex real-life system as a system of land registration can only be done with the appropriate attention for the methodologies to be used at the start of the study. The case study methodology highly recommends having a well-formulated theory (although not final of course) in advance, but in the field of land registration[93] it is still a more cyclic affair. For many highly relevant study's questions, there is no such a well-formulated theory available beforehand. The case study design has to be based on less elaborated concepts, which themselves will be theoretically strengthened as a result of the studies. Obviously, the results of the studies will also make it possible to improve some of these concepts. At the start of this study the static model of land registration with the three entities to be identified was well known, but the dynamic model of the system of land registration, with

[93] It seems save to assume that this also holds for the related and partly overlapping field of cadastre and the field of land administration.

its three main functions, has been worked out during the study, and mainly after completion of the case study.

7.2.2 Overall findings

complexity of land rights
Property rights are complex institutions which need a wide variety of conditions to be met (the rights institutional framework) in order to succeed. This seems to apply even more to property rights in land. Except for relatively closed local communities, a well functioning system of land registration seems to be one of these conditions, but certainly not the only one.

wider goals
In projects where land registration is only a component, it is possible that the system of land registration is not the weakest link. For instance a land market stands on three pillars, of which land registration (and cadastre) is only one, whereas valuation and financial services are the others (see e.g. Dale/Baldwin 2000: 4-6). This emphasizes that land registration is only a tool, and no end in itself. We should always optimize the tool in the context of the goal it is supposed to be achieving.

parcels are no ordinary geographical information
Parcels, being the object of property rights in land, can not be measured or surveyed. They have to be identified by humanly constructed institutional arrangements. Even though their link to use patterns often allows for some link to topographical features, this should never be forgotten. This makes land registers and cadastres clearly different from other geographical information systems, which record physical attributes, whose collection can be purely technological. (compare van der Molen 2001: 15)

land tenure confusion
The general IT phrase ‘garbage in is garbage out’ also holds for systems of land registration. When there is 'land tenure confusion' in an area, (digitally) registering this is not going to mend the confusion. If the system of land tenure is unclear or uncertain, this should be solved first, even before any kind of adjudication starts. This would turn the project into a land reform, not always (politically or socially) desirable. Confusion in the parcel boundaries and/or the titles to these can be solved with the adjudication function, but only if this approach is acceptable to most people, if the process does not divest certain (usually weak) groups more or less systematically of their rights, and if the process is equally accessible to all kinds of right holders.

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ANNEX B TRANSLATIONS

from Dutch

D1
”een *systeem* is een *geheel van elkaar wederzijds beïnvloedende componenten* die *volgens een plan geordend zijn* teneinde een bepaald *doel* te bereiken.” (Thierry 1965: 164)

D2
“een systeem representeert een geheel als georganiseerde verzameling van onderling samenhangende componenten.” (Keuning 1973, p 67)

D3
“iets *is* geen systeem maar kan met het oog op de oplossing van een bepaald probleem als een systeem worden beschouwd.” (Brussaard 1998: 111)

D4
“Het specialiteitsbeginsel en het publiciteitsbeginsel grijpen hier in elkaar (zie o.a.HR 6 juni 1986, NJ 1986, 750) ...” (Snijders 1991: 125)

D5
“een hulpmiddel als het kadaster voor de identificatie daarvan onmisbaar.” (Snijders 1991: 125)

D6
“onroerende zaken zijn, wat hun begrenzing betreft, in wezen vlottend ...” (Snijders 1991: 125)

D7
"bij een gevalsstudie gaat het om de intensieve bestudering van een verschijnsel binnen zijn natuurlijke situatie, zodanig dat de verwevenheid van relevante factoren behouden blijft" (Hutjes/Van Buuren 1994: 15)

from German

G1
In der Beschränkung zeigt sich erst der Meister (Proverb; Wolters’ Woordenboek Duits/Nederlands [Dictionary German/Dutch], 1987, under *Beschränkung*)

G2
Spezialitätsprinzip; Eintragungsprinzip; Konsensprinzip; Publizitätsprinzip (Kurandt 1957: 17-18)

G3
Klarheit, Richtigkeit, Rechtssicherheit, Verständlichkeit (auch für den Laien) (Kurandt 1957: 17)

G4
... die Geringschätzung jeglicher juristischer Beratertätigkeit beim Liegenschaftserwerb durch Torrens aber als zu weitgehend angesehen werden. (Hofmeister/Auer 1992: 14).

G5
Grundkartei im Frankreich (Fichier immobilier) ähnelt in technischer Hinsicht dem Hauptbuch der mitteleuropäischen Grundbücher, stellt aber rechtlich ein bloßes Hilfsregister dar. (Hofmeister/Auer 1992: 18).

G6
... [[das spanische und das niederländischen System nehmen]] eine eigentümliche Mittelstellung zwischen dem französischen System einerseits und dem mitteleuropäischen Grundbuchtypus anderseits ein. (Hofmeister/Auer 1992: 19).

G7
Die Vermessungsleute und die Grundbuchleute müssen sich für die beiderseitige Berufsarbeit interessieren. Der eine muß wissen, welches die Sorgen und Nöte, die Ziele und Bestrebungen des anderen sind. Beide müssen erkennen, dass darin ihre Berufsverantwortung, ihre Berufsbefriedigung und ihre Berufsehre wurzelt. (So Haußmann, Justizminister des Landes Baden-Württemberg, auf der Jahrestagung des Bundes der Öffentlich bestellten Vermessungsingenieure in Heidelberg am 22. Oktober 1955.) (Kurandt 1957: 6)

ANNEX C VISITED LAND ADMINISTRATIONS OFFICES

Country	Land Registry/ Court	Notary/ Lawyer	Cadastre/ Survey Dept.	Licensed Surveyor	Town & Country Planning	Land(s) Commis-sion	Other
Australia	C (94)			C (94)			
Austria	R (96^2)	R (96^2)	S (90), R (96^2), S (00)	R (96)			R (96)
Bulgaria	A (98-00^2)	A (98-00)	A (98), A (00)	A (98)	A (00)	A (98), A (00)	A (00)
Czech R.	-cad.-		S (00)				
Czecho-slovakia				~ S (90)	≈ S (90)		
Denmark			S (87)				
England	C (98)		S (89)				
Ghana	R (97^2)		O (95), R (97)	R (97)	O (95)	O (95), R (97)	R (97)
Hungary				~ S (85)	≈ S (85)		
Indonesia	-cad.-	R (96)	R (96)			R (96)	
Italia				~ S (86)			
Moldova	-cad.-		A(94-97)		A (94)		A (94-97)
Nether-lands	-cad.-	R (95)	S (85), R (95), O ()		S (88)		
Spain	C (00)				≈ S (88)		
Sweden			O (98)				

S = during student trip (Snellius International Excursions; student or supervisor)
C = conference participant (during Technical Tours)
R = researcher (PhD case studies)
A = advisor/consultant
O = other (orientation etc.)
(95) = year of visit (^{2} means two visits in same year)

≈ = comparable organization
~ = partly comparable organization
-cad.- = land registration performed by same organization that keeps the cadastre
___ = present during actual performance of field work or transaction

GRONDBOEKHOUDINGSYSTEMEN - ASPECTEN EN EFFECTEN

Jaap Zevenbergen

Aan de hand van de onderzoeksvraag en de deelvragen wordt in het onderstaande een overzicht van de uitkomsten van het onderzoek gegeven. Begonnen wordt met de deelvragen.

deelvragen
Elk van de hoofdstukken 2 - 6 is gebaseerd op één daarvan deelvragen. Na herhaling van de vraag, volgt de hoofdlijn van het antwoord zoals dat in de hoofdstukken is uitgewerkt.

A. Wat is grondboekhouding and hoe heeft het zich ontwikkeld?

Deze vraag is beantwoord in hoofdstuk 2, waarbij de lijn wordt gevolgd van de (historische) ontwikkeling. Grote delen van die lijn kunnen door de tijd heen in de meeste landen worden aangetroffen.
Grondboekhouding can worden omschreven als het proces van het vastleggen van juridisch erkende (eigendoms- en/of gebruiks-) rechten op grond. Het koppelt de eigenaar, het recht (ook wel titel) en het perceel aan elkaar (zie Figure 2.1). Er kunnen vier typen transactiebewijs worden onderscheiden (mondelinge overeenkomst, *private conveyancing*, aktenregistratie en rechtsregistratie). Alleen bij de laatste twee kan met recht van een grondboekhouding gesproken worden (zie Figure 2.2).
Eenheden grond moeten op één of andere manier afzonderlijk identificeerbaar worden gemaakt, bijv. door het gebruik van kadastrale of index kaarten en identificatienummers (zie § 2.2.5).
Hoewel vaak de nadruk wordt gelegd op de verschillen tussen de systemen die in verschillende landen bestaan, bestaan er ook verschillende vaak gebruikte principes en kenmerken. Een belangrijke lijst van principes bestaat uit het specialiteits-, het boekings-, het instemmings- en het publiciteits-principe. Een belangrijke lijst van kenmerken bevat veiligheid, eenvoudigheid, accuratesse, snelheid, goedkoopheid, toepasselijkheid voor de omstandigheden en volledigheid van de boekhouding. Deze kenmerken kunnen als een reflectie worden gezien van de verwachtingen die de maatschappij van een grondboekhoudingsysteem heeft. Ze kunnen worden samengevat als de ‘betrouwbaarheid’.

B. Welke indelingen van (delen van) grondboekhoudingsystemen worden gebruikt, en hoe bruikbaar zijn deze?

Deze vraag is beantwoord in hoofdstuk 3. In aanvulling op de (te vaak gebruikte) indeling in rechtsregistratie versus aktenregistratie, worden zes andere indelingen behandeld. Het gaat om negatief versus positief systeem, perceelsidentificatiesystemen, *race versus notice statutes*, *fixed versus general boundaries*, systematische versus sporadische *adjudication*, en organisatie van kadaster en openbare registers (‘hypotheekkantoor’). In het meest gunstige geval kunnen de indelingen worden gebruikt om een deel- of aspectsysteem van het grondboekhoudingsysteem te classificeren. Maar zelfs voor zulke deelsystemen leidt dit slechts tot een één-dimensionele indeling, terwijl meestal een multi-dimensionele matrix van attributen, die elk verschillende occurences kunnen hebben, nodig zou zijn om een volledig beschrijving te kunnen geven van de verschillende systemen die wereldwijd aangetroffen kunnen worden. Het projecteren van zulke complexiteiten op een één-

dimensionale indeling leidt vrijwel onherroepelijk tot het soort haast emotionele discussie dat regelmatig ontstaan over rond rechts- versus aktenregistratie en *fixed versus general*. Uiteindelijk worden de verschillen vooral veroorzaakt door de manier waarop het systeem omgaat met de verschillen tussen het geabstraheerde concept en de werkelijkheid op de grond. Tenslotte is het belangrijker dat het systeem heldere keuzes bevat aangaande de belangrijkste verschillen, dan hoe die keuzes luiden.

C. Wat is de systeembenadering, en hoe kan die worden gebruikt om tot een (conceptueel) model van grondboekhoudingsystemen te komen?

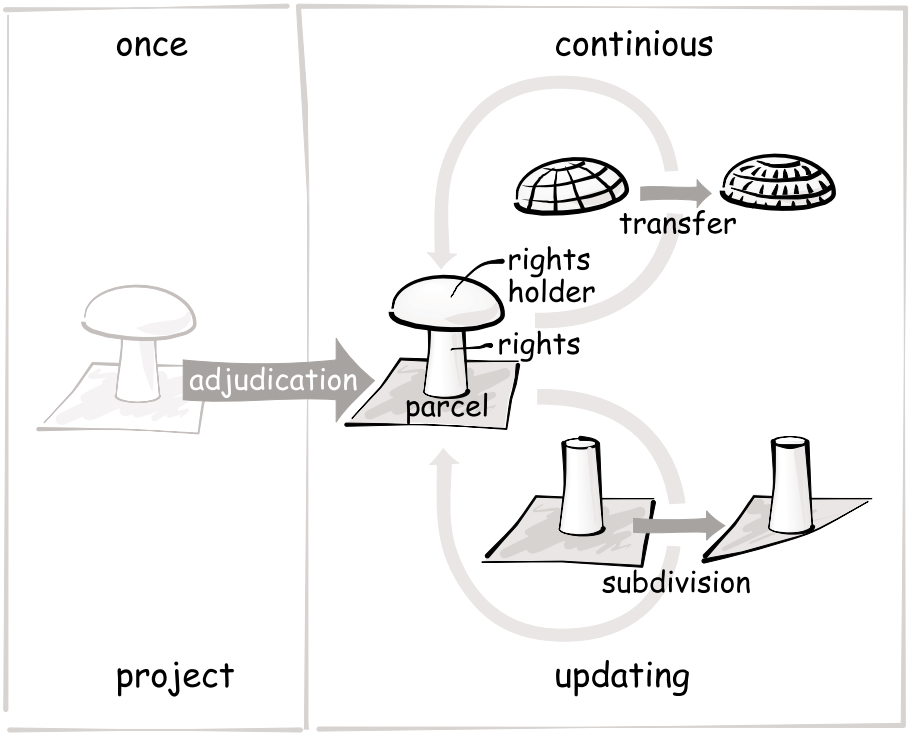
Binnen de systeembenadering gaat het primair om het bestuderen van het geheel. In het kader van dit onderzoek kan onder een systeem worden verstaan als een set van elementen, samen met de relaties tussen de elementen en tussen hun attributen in relatie tot elkaar en tot hun omgeving zodanig dat ze een geheel vormen dat beoogt een bepaald doel te bereiken. Elk van de cursieve termen is uitgelegd en toegepast op het grondboekhoudingsysteem. Het systeem als geheel wordt gekenmerkt door emergente eigenschappen, waar de betrouwbaarheid van het grondboekhoudingsysteem een duidelijk voorbeeld is.

Figuur 4.5; Het grondboekhoudingsysteem geabstraheerd als input - output model

Grondboekhouding wordt gepresenteerd als een open systeem, en is afgebeeld als een ‘black box’ in een input - throughput - output model. In de context van dit onderzoek is als input voor de (werkelijke) grondgebruiksrechten-situatie en als output voor de juridische zekerheid gekozen (zie Figuur 4.5).

Voor de beschrijving van grondboekhouding zijn zowel het statische als het dynamische systeem nuttig. Het statische systeem concentreert zich op het beschrijven van welke informatie is vastgelegd en hoe. Het sluit goed aan op de link tussen eigenaar, recht (titel) en perceel (zie Figure 2.1). Het dynamische systeem concentreert zich op de drie functies van *adjudication*, overdracht van een geheel perceel en perceelssplitsing. Terwijl de eerste een eenmalige activiteit (project) is, gaat het bij de andere twee om continue processen (bijhouding), zoals blijkt in Figuur 4.8. De twee bijhoudings-functies worden verder uitgewerkt in een lijst van taken, waarvan de meeste in ieder systeem voorkomen. Voor iedere taak is een aantal vragen geformuleerd. Dit leidt tot een tabel (zie Figure 4.11) die voor ieder systeem kan worden ingevuld (zoals in hoofdstuk 6 voor de cases is gedaan).

De resultaten van het modelleren dienen wel in het juiste perspectief te worden gezien. In de eerste plaats is het een eerste poging in deze richting. In de tweede plaats concentreren de modellen zich op de technische, juridische en organisatorische aspecten, en laten dus de sociaal-culturele en financieel-economische aspecten buiten het hart van het model. In de derde plaats wordt iedere studie, en zeker een casestudie, beïnvloed door de cases die bestudeerd zijn, zoals bijv. in dit onderzoek niet alle belangrijke groepen van grondboekhoudingtypes volledig zijn vertegenwoordigd. Daarom kan nader onderzoek ter verbetering van de modellen zeker worden aangeraden.



Figuur 4.8; Dynamisch model van grondboekhoudingsysteem ('champignon' geeft het statische model weer)

D. Waarom is casestudie-onderzoek de meest geschikte methodologie voor dit onderzoek, en hoe zet je zo'n onderzoek 'solide' op?

Casestudie-onderzoek is bijzonder geschikt voor het bestuderen van actuele fenomenen binnen hun werkelijke context, en vooral waarneer de grenzen tussen het fenomeen en de context niet op voorhand duidelijk zijn. Het behoudt verder de onderlinge relaties tussen de relevante factoren. Het is erg bruikbaar voor het bestuderen van grondboek-houdingsystemen. De grenzen tussen zulke systemen en hun omgeving is niet altijd op voorhand duidelijk, en de verwachting bestaat dat de onderlinge relaties (samenhang) tussen de verschillende elementen en aspecten erg sterk is.
Het uitvoeren van een 'solide' casestudie begint met het bestuderen van methodologische literatuur over casestudie-onderzoek (vooral Yin 1994). Het is belangrijk om voorafgaand aan het daadwerkelijk bestuderen van de cases een goed onderzoeksontwerp en case-protocol op te stellen. We kunnen zeggen dat het doen van onderzoek vooral bestaat uit het maken van keuzen. Het is belangrijk om die keuzes weloverwogen te maken en ze te beschrijven. Een goed ontwerp en protocol dragen er aan bij om de focus te behouden wanneer het risico bestaat dat we afdwalen door erg boeiende, maar niet relevante, informatie. Het gebruikte onderzoeksontwerp bevat hypothesen aangaande de onderlinge samenhang tussen de verschillende aspecten.
Dit onderzoek is opgezet als een meervoudige casestudie, die vier cases omvat. Deze cases zijn de grondboekhoudingsystemen in Nederland (1995), Indonesië (1996), Oostenrijk (1996) en Ghana (1997). Met de cases is naar maximale variante gestreefd, vooral wat betreft de vijf vooraf gedefinieerde karakteristieken (zie Figure 5.2). Elke case rapport is geschreven langs de lijnen van een vooraf gedefinieerde structuur, gebaseerd op de technische, juridische en organisatorische aspecten van grondboekhouding.

E. Wat zijn de (belangrijkste) uitkomsten uit de bestudeerde cases (voor elke case en gecombineerd)?

Het resultaat van de vier cases is neergelegd in afzonderlijke case rapporten. Een kort overzicht langs de lijnen van de processen en de aspecten maakt deel uit van dit boek. De belangrijkste conclusies per case worden ook gegeven, evenals ingevulde lijsten met taken die vervuld moeten worden om de twee bijhoudings-functies van het dynamische grondboekhoudingsysteem (overdracht en splitsing) te vervullen (zie Figures 6.1, 6.3, 6.5, 6.7 en 6.8).

Het belangrijkste resultaat is dat de grondboekhoudingsystemen in Indonesië en Ghana slechts beperkte invloed hebben in het land en niet gezien kunnen worden as erg betrouwbaar. De systemen in Nederland en Oostenrijk ondersteunen duidelijk een functionerende grondmarkt. De cases maken het niet echt mogelijk om de in het onderzoeksontwerp geformuleerde hypothesen te aanvaarden of te verwerpen.

Het bleek erg handig om het grondboekhoudingsysteem als primair systeemniveau te gebruiken in dit onderzoek, dat zich vooral richt op de grondboekhouding voor het voorzien in juridische zekerheid voor eigenaar en koper. Het grondboekhoudingsysteem toont duidelijk de emergente eigenschap van betrouwbaarheid, welken niet aan enig deelsysteem kan worden toegerekend. Hoewel moeilijk te kwantificeren, is het niet moeilijk om een kwalitatief gevoel te verkrijgen over de mate waarin een gemeenschap/ maatschappij (die een deel van een rechtsgemeenschap kan omvatten) vertrouwen in een systeem stelt of niet.
Men moet, echter, niet vergeten dat een betrouwbaar grondboekhoudingsysteem niet de enige voorwaarde voor een actieve grondmarkt is (o.a. een financiële infrastructuur die hypotheken mogelijk maakt is evenzeer nodig). Wanneer de grondmarkt het onderwerp van studie is, dan moet grondboekhouding als een subsysteem worden gezien, and moet het primaire systeem op een hoger niveau liggen.

hoofdvraag
Nu dat de deelvragen beantwoord zijn, wordt beantwoording van de onderzoeksvraag reëel. De onderzoeksvraag luidt:

> Hoe beïnvloeden de technische, juridische en organisatorische aspecten en hun onderlinge relaties de wijze waarin een grondboekhoudingsysteem in staat is om adequate rechtszekerheid te verschaffen aan eigenaar en koper van onroerend goed in een bepaald land (jurisdictie)?

Een deel van deze vraag leidde tot de hypothesen die in Figure 5.1 worden gepresenteerd en zien op de onderlinge invloed van de kwaliteit van de drie soorten aspecten. De cases voorzien niet in voldoende informatie om de in het onderzoeksontwerp geformuleerde hypothesen te kunnen accepteren of verwerpen. Er zijn wel indicaties dat de hypothesen zouden kunnen kloppen, en –dus– dat de organisatorische aspecten het belangrijkste zouden zijn bij het werkend maken van een grondboekhouding. De onderlinge relaties tussen de verschillende soorten aspecten blijken nog sterker dan verwacht. Bovendien blijken de aspecten gegroepeerd als organisatorische aspecten zo divers, dat deze niet goed met één kwalificatie kunnen worden afgedaan. Geconcludeerd kan worden dat de hypothesen op een te klein aantal dimensies zijn gebaseerd om ze op basis van de bestudeerde cases te accepteren of verwerpen.

De onderzoeksvraag impliceert al dat de technische, juridische en organisatorische aspecten invloed hebben op het grondboekhoudingsysteem en hoe dat zijn doel(en) bereikt. Het zelfde geldt voor de onderlinge relaties ertussen. We kunnen vaststellen dat de onderlinge relaties nog sterker zijn dan van tevoren verwacht.
De subsystemen die als deel van een grondboekhouding gezien kunnen worden, evenals de functies die nodig zijn om de grondboekhouding te voeren, kunnen –tot op zekere hoogte– beschreven en gezien worden als het domein van één aspectsysteem (jurist, landmeter, IT-specialist). Desalniettemin beïnvloeden aspecten uit andere aspectsystemen altijd de beperkingen en mogelijkheden (zoals het gebruik van nieuwe technologie dat afhangt van de wijze waarop de regelgeving over landmeten is geformuleerd en de aanwezigheid van geld en mankracht om deze aan te schaffen en in te zetten). Een op één soort aspect gebaseerde beschrijving dient daarom altijd bekeken te worden met het gehele systeem voor ogen. Het onderhavige onderzoek voorziet in (conceptuele) modellen van zo'n geheel grondboekhoudingsysteem, dat degene die een deelsysteem van een grondboekhoudingsysteem bestuderen kan helpen om hun uitkomsten in het juiste perspectief te plaatsen.

Uiteindelijk bepaalt de dagelijkse praktijk (hoe goed of slecht die ook is) in hoge mate of het systeem zijn doel(en) bereikt en of men het kan vertrouwen. Wat als een minder dan perfecte theoretische oplossing vanuit technisch, juridisch of organisatorisch oogpunt gezien moet worden –als we het daarover eens kunnen worden–, blijkt in de praktijk soms toch te werken. Voorbeelden zijn index kaarten, aktenregistraties en losstaande openbare registers. Het omgekeerde, een slechte dagelijks uitvoering van een theoretisch goede oplossing kan ook eenvoudig gevonden worden. Vooral zorgelijk zijn de gevallen waarin één deelsysteem of functie theoretisch geperfectioneerd wordt, terwijl de rest van het zwakke systeem met rust wordt gelaten. Dit gebeurt wanneer een project ter verbetering of aanpassing van een systeem een te nauwe focus kent (o.a. het 'mechaniseren' van bestaande taken met behulp van computers), of wanneer het project niet is gebaseerd op een breed genoeg zijnde (case) studie van de bestaande situatie. Het laatste lijkt op de situatie waarin een systeem –of elementen daarvan– van het ene land in een ander land geparachuteerd worden. Vrijwel alle auteurs realiseren zich dat dit niet wenselijk is, maar toch sluipt het regelmatig in het ontwerp en vooral in de uitvoering van veel projecten. Geen van ons kan aan zijn primaire training en ervaring ontsnappen. En die beperkt zich veelal tot één of twee landen.

In de onderzoeksvraag gaat het erom dat het grondboekhoudingsysteem in staat is om adequate rechtszekerheid te verschaffen aan eigenaar en koper van onroerend goed in een bepaald land (jurisdictie). In dit onderzoek is dat niet op een kwantitatieve manier gemeten, maar uitgedrukt middels de betrouwbaarheid van het systeem. Deze betrouwbaarheid van het grondboekhoudingsysteem is een zgn. emergente eigenschap van hetzelfde systeem. Een belangrijke karakteristiek van emergente eigenschappen is dat deze niet kunnen worden gereduceerd tot een optelling van attributen van elementen. Daarom heeft het in de context van deze onderzoeksvraag weinig zin om de aspecten en hun onderlinge relaties te onderscheiden. Het antwoord op de onderzoeksvraag zou dus als volgt kunnen luiden *'samen als geheel'*. Dit onderstreept de toepasselijkheid van de systeembenadering voor dit onderwerp. Dit betekent dat de toepasselijkheid van de *combinatie* van (oplossingen van) deelsystemen of elementen en hun onderlinge relaties veel belangrijker is dan de individuele oplossing die voor een specifiek subsysteem of element wordt gekozen. De schade van één zwakke schakel overtreft in hoge mate de voordelen van een andere schakel die extra sterk is gemaakt. Hoewel iedere vergelijking

maar in beperkte mate opgaat, kan dit worden beschreven als “een ketting is zo sterk als zijn zwakste schakel”. Helaas weten we (nog) niet hoe de sterkte van iedere schakel afzonderlijk op een vergelijkbare wijze te meten, en misschien zou de vergelijking moeten zijn met een meervoudig snoer, waarbij de zwakke plek in de ene streng gecompenseerd kan worden door genoeg kracht in de andere strengen. Uiteindelijk kan alleen het trekken aan de hele ketting of snoer ons vertellen hoe sterk deze is; *ergo* wat de betrouwbaarheid van het grondboekhoudingsysteem is.

Het antwoord op de onderzoeksvraag is:

> *De onderlinge relaties tussen de technische, juridische en organisatorische aspecten zijn zo sterk, dat –in de context van dit onderzoek– alleen het totale effect kan worden bepaald door middel van de mate van betrouwbaarheid, en dat we er van uit moeten gaan dat de aspecten samen als geheel invloed hebben op de mogelijkheden voor het systeem om zijn doel te realiseren.*

CURRICULUM VITAE

Jaap Zevenbergen was born in 1965 in the South of the Netherlands, but grew up on a farm in the newly reclaimed polder Flevoland. After completing his secondary education, he spent a year as an exchange student in the United States. From 1984 till 1992 he studied, partly parallel, Geodetic Engineering at the Delft University of Technology and Dutch Law at the University of Leiden. Since 1989 he has worked at the Geodetic Department of the Delft University of Technology, where he became an assistant professor in 1991.

Areas in which he lectures or has lectured include cadastre and land registration, property law, physical planning, land consolidation and organizational and legal aspects of local land information systems and national geo-information infrastructures. At numerous occasions he has lectured to students from Central and Eastern Europe.

In the areas of land registration, cadastre and land information systems Mr. Zevenbergen has undertaken research projects, authored and co-authored papers and articles, supervised student projects as well as MSc and PhD theses, participated in national and international consultancies and acted as advisor to the Dutch Ministry of Housing, Physical Planning and the Environment. Since 1995 he worked, mostly parallel to this, on the underlying PhD study.

Mr. Zevenbergen contributed to the administration of the Geodetic Department as a member of the General Board (1993-1995) and as a member, secretary and chairman of the Study Board (1991-1993 and 1999-date). He was involved with several redesigns of study programs (both in Delft and in Ljubljana, Slovenia), three of which he co-authored. He fulfils and has fulfilled several other functions related to educational processes.

Mr. Zevenbergen is married with three children. He is actively involved in organizing church activities in the English language in Delft.