

# Surveying the Surveying Profession

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**Key words:** Surveying Profession, Surveying Market, Professional Development.

## ABSTRACT

Since the late 1960's the Danish Association of Chartered Surveyors has carried out a survey of the surveying profession every 10 years starting in 1967. The changes taken place over these 30 years and especially over the last two decades are quit remarkable.

The professional profile of the Danish surveyors is a combination of technical, judicial and design areas. The profile thus is a mix of an engineer, a lawyer and an architect. The professional fields then consist of three areas: surveying and mapping, cadastre and land management, and spatial planning. Cadastral tasks are the monopoly of licensed surveyors in private practice, and the role of the private licensed surveyor has traditionally epitomised the Danish surveyor.

However, both the structure of the surveying profession and the professional profile of the Danish surveyor are turned upside down over the latest two decades.

The paper presents the concept used for surveying the surveying profession. The concept is designed for monitoring the professional profile in surveying as well as the surveying market. The key result of the survey is that "the only constant is change". The concept is used as a strategic tool for professional development to manage this constant change. Surveying the surveying profession, this way, provides a basis for professional development, and it provides a backbone for the profession itself.

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## 1. INTRODUCTION

Since the late 1960's the Danish Association of Chartered Surveyors has carried out a survey of the surveying profession every 10 years starting in 1967. The purpose of the survey is to document any developments and changes in a longer perspective and thereby being able to assess the structural developments of the profession as well as the market. The historical developments must be well documented as a basis for making any strategic plans for the developments of the future.

In order to facilitate comparison, the surveys have been designed to follow more or less the same concept. The key issue is to measure the distribution of total working hours within the year (say 1997) in percentage of the main professional areas of work. The result will shape the professional profile of the profession that can then be compared with earlier surveys. At the same time, this profile will indicate the changes in the surveying market.

The changes taken place over the last 30 years and especially over the latest two decades are quit remarkable. In fact, both the structure of the surveying profession in Denmark and the professional profile of the Danish surveyor are turned upside down over the latest two decades.

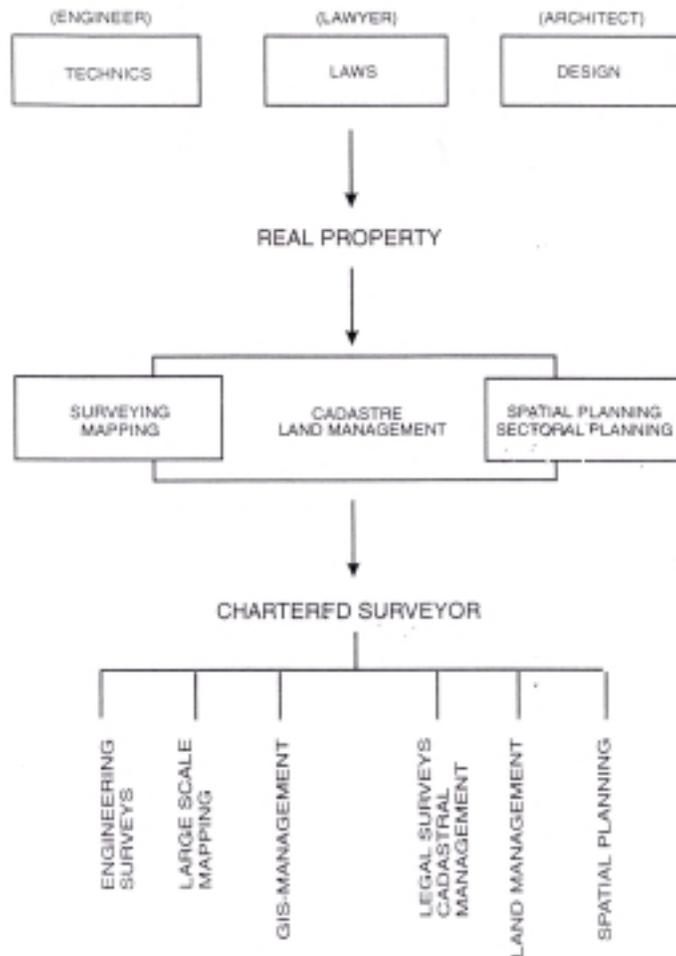
The paper presents the concept used for surveying the surveying profession. The key result of the survey is that "the only constant is change". The insight provided through the surveys is used as a strategic tool for professional development to manage this constant change.

In order to understand the concept and the results the paper starts by introducing the general profile of the Danish surveyor and the surveying profession.

## 2. THE PROFILE OF THE DANISH SURVEYOR

The professional profile of the Danish surveyor is a combination of three professional areas: technical, law, and design. The profile thus is a mix of an engineer, a lawyer and an architect, and the professional fields consist of three areas: surveying and mapping, cadastre and land management, and spatial planning. Cadastral tasks are the monopoly of licensed surveyors in private practice, and the role of this private surveyor has traditionally epitomised the Danish surveyor.

This very broad professional profile seems to appeal to potential students and it allows for a very broad spectre of employment opportunities in both the private and the public sector. The synthesis of the professional traditions in engineering, architecture and law also provides excellent skills for handling interdisciplinary problems.



*Fig. 1. The profile of the Danish Surveyor*

### 3. THE PROFILE OF THE SURVEYING PROFESSION.

Denmark is as small country of about 43,000 sq km (not including the regions of Greenland and the Faroe island). The population is 5,2 million, of which one third is living in the capital area of greater Copenhagen.

There are about 900 active surveyors in Denmark. In total the number is about 1200 including pensioned members, student members, etc. Just about all surveyors are member of the Danish Association of Chartered Surveyors.

The surveying profession in Denmark is organised in three main groupings: The private licensed surveyors being the owners of the private surveying firms, the surveyors employed in the private surveying firms and, finally, the surveyors employed in the public sector or in the private sector outside the private surveying firms. The evolution within these three groupings is shown in the figure below.

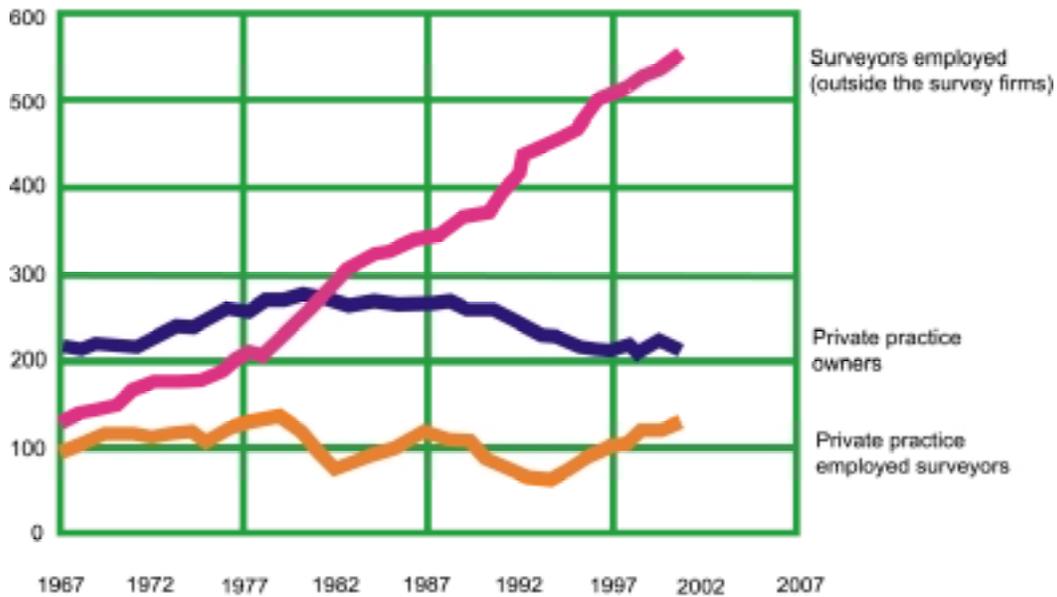


Fig. 2. The evolution of the surveying profession in Denmark

In 1967 the number of surveyors working in the private surveying firms accounted for about two thirds of the total profession while surveyors employed in the public sector or in other private business accounted for only one third. In 1997 the situation is reversed. Two thirds of the profession is employed outside the private surveying firms. During these 30 years the number of active surveyors is doubled from about 450 in 1967 to about 850 in 1997. This means that the growth is located within the surveyors employed in the public sector or other private business while the number of surveyors working in the private surveying firms has been more or less steady during the last 30 years.

The group of surveyors employed outside the surveying firms consist of surveyors employed by the national authorities, the county or municipal authorities, or by other private companies outside the surveying firms (e.g. engineering and mapping firms, concessionary companies such as utilities, IT companies etc. The evolution within these areas is shown below.

	1967	1977	1987	1997	2001
State Agencies and National Authorities	90	115	108	155	150
County Municipal Authorities	32	70	123	220	258
Private companies outside the surveying firms.	5	19	119	140	150
<b>Total</b>	<b>127</b>	<b>204</b>	<b>350</b>	<b>515</b>	<b>558</b>

Fig 3. The evolution of surveyors employed in the public sector or the private sector outside the surveying firms.

#### 4. THE PROFESSIONAL PROFILE - THE ONLY CONSTANT IS CHANGE

Also the professional profile of the Danish surveyor is turned upside down over the last 30 year. In 1967 and still in 1977 the cadastral area dominated the profile of the Danish surveyor, while in 1997 it accounts for only 20 percent of the total working hours. However, the Cadastral area still accounts for about 170 man-years, and it is still a key area within the profession. In 1997 the distribution was as follows: Planning and Land Management 23 %, Cadastral Work 20 %, Mapping and Engineering Surveys 26 %, and “Other Areas” 31%. Next to the decrease in the cadastral area it is remarkable that the largest area in 1997 is located outside the traditional working areas. These “other task areas” include general management, general IT-development, and other business developments.

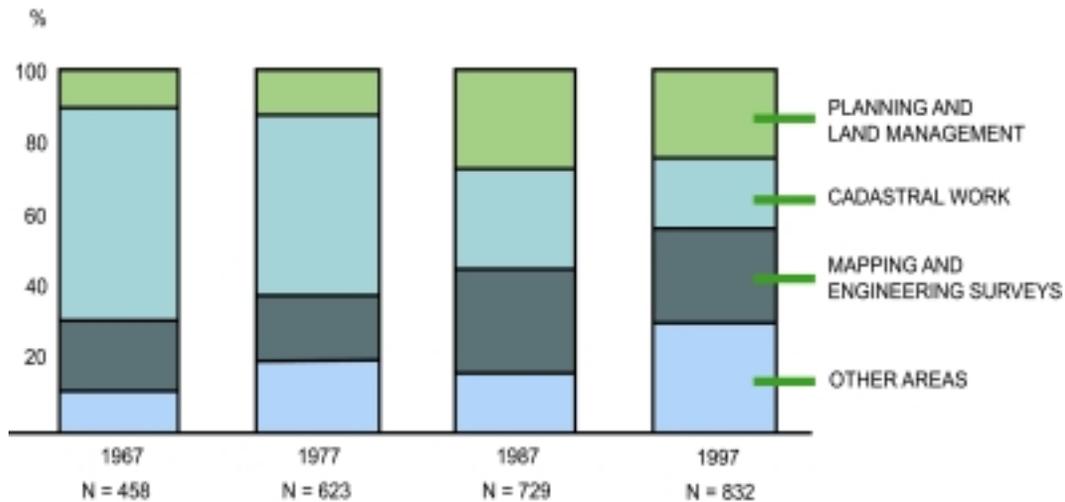


Fig. 4. The evolution the professional profile of the Danish Surveyor

The changes shown above are significant and must of course be reflected in the content and structure of the educational base. In fact, the changes have been coped with rather easily within the profession and also with regard to the labour market. It is likely to assume that this is due to the flexible and project organised educational model introduced in 1974 when the surveying programme was moved from the Royal Veterinary and Agricultural Academy in Copenhagen to a new university established in Aalborg. It is also likely to assume that without a flexible educational base being focused on the concept of learning to learn rather than teaching disciplines, and without the deriving adaptability of the graduates being suitable for a changing market, the surveying profession would have faced some heavy problems.

The general profile as presented above of course varies within the different groups of surveyors. E.g. the profile of the surveyors employed in the public sector is almost in contrast to the profile of the surveyors employed in the private companies (outside the surveying firms). Within the public sector the emphasis is on the planning and land management area (40%) while in the private sector the largest area is within “other areas” such as leadership and general management and IT-development (55%). In private surveying practise the focus is of course on the cadastral and mapping area.

## 5. THE PRIVATE SURVEYING FIRMS

Cadastral work in Denmark, or surveying for legal purposes, is a monopoly of licensed surveyors in private practice. License is granted to the surveyors having completed a University degree, M.Sc. in Surveying, Planning and Land Management, and after having worked for a private surveying firm for three years. There are about 100 private surveying firms employing about 300 surveyors in total (as per January 2002). The number of surveying firms is decreasing and the structure of the private surveying branch is changing over time. The trend is towards bigger firms and company co-operations.

Private surveying firms	1987		1997		2002	
	Firms	Surveyors	Firms	Surveyors	Firms	Surveyors
1-3 surveyors	137	224	94	148	83	129
More than 3 surveyors	23	155	24	169	22	172
Total	160	379	118	317	105	301

*Fig 5. The structural evolution of the private surveying firms.*

The duties and responsibilities of the licensed surveyors are controlled through the Surveyors Act. The process of the cadastral work regulated in the Act of Subdivision and Land Registration. When land is to be parcelled out or property boundaries to be changed, the private or public landowner must apply to a private licensed surveyor for the legal surveys and for the preparation of documents needed for submission of an application to the National Survey and Cadastre for updating the cadastre. The application must contain a map showing the cadastral alterations, measurement sheets showing the new boundaries, documentation regarding the legal property rights, and documentation for the future land use in consistency with any planning regulations and relevant land use laws. The approval from the National Survey and Cadastre, showing the updated register and the updated map, is returned to the licensed surveyor, and it is forwarded to the municipality for updating of the property tax register, and to the land registry office for updating the land book. The total cadastral dataflow will now be managed through a concept for digital lodgement and processing.

Next to the cadastral work, the private surveying firms carry out engineering surveys and mapping tasks, and offers consultancy on legal and managerial issues concerning land use and property rights.

	Minor firms	Major firms	1997	1987
Cadastral work	48	40	43	40
Mapping	9	10	10	14
Engineering surveys	20	20	20	37
Consultancy, etc.	23	30	27	9
Total	100 %	100 %	100 %	100 %

*Fig. 6. The surveying firms. Distribution of work areas in percentage of the total working hours.*

## **6. EDUCATION AND TRAINING**

The survey every ten years also includes the area of education and training. It is assessed whether the educational profile matches the demands of practice. And it is measured to what extent the surveyors make use of opportunities for in-service training activities such as training courses and professional seminars, symposia and workshops.

The match between university education and professional practice is assessed by asking the surveyors to indicate areas of their education they have not utilised in their working life, and also to indicate work areas where they feel their education was lacking. The results are rather clear. The educational profile is assessed as adequate and there are no major areas lacking. However, there may be a need to improve the areas of general management and business economics in the university programme. This may be developed in combination with CPD programmes in the same areas.

Regarding the training activities the result is very encouraging. More than 80% of the surveyors attended such activities in 1997. Ten years ago the percentage was 72, twenty years ago it was 41, and 30 years ago, in 1967, only 11% of the surveyors attended in-service training activities. In 1997, the surveyors employed in the public sector use eight days in average on training activities. Surveyors in the private sector (outside the surveying firms) used six days, and the surveyors in private surveying practice used five days.

In average the surveyors spent six days on in-service training activities in 1997. This is in fact more than recommended in the concept for Continuing Professional Development (CPD) that was put into force in January 1995. The recommended standard in the CPD concept is 40 hours per year. This is a very positive trend. The standard is voluntary and it is up to the individual members to meet the requirement in a manner suited for their own needs. On the other hand, a significant number of surveyors are still not performing training activities to fulfil the standard.

## **7. SURVEYING THE SURVEYING PROFESSION**

The concept used for surveying the surveying profession is quit simple. The basic component is a diagram designed to measure the distribution of total working hours of the year in percentage on the main grouping of working areas. The survey, this way, collects information about the professional profile as well as the surveying market. By carrying out this survey every ten years, the current profile can be assessed as a stage of evolution over time. The questionnaire of course also includes information about year of birth and graduation, place of employment (including geographic location), and position held. This is used for showing the variations with regard to geographical location, age, group of employment, etc. A second and separate questionnaire was used to collect information about the private surveying firms. The answers are of course anonymous. The total answering percentage was 81 varying from 71 % in private surveying practice to 87 % for the group of surveyors employed outside surveying practice. This result is of course very satisfactory.

The main diagram of the questionnaire is shown below:

Please distribute your total working hours in percentage on the main grouping and then tick the areas to indicate your main professional areas of work.

Indicate %	Tick
<input type="checkbox"/> %	<b>SPATIAL PLANNING</b> National planning ..... Regional planning ..... Municipal planning ..... Local planning .....
<input type="checkbox"/> %	<b>SECTORAL PLANNING AND LAND MANAGEMENT</b> Nature protection, raw materials ..... Agriculture and land consolidation ..... Environmental protection and water resources ..... Roads..... Utilities..... Other.....
<input type="checkbox"/> %	<b>LAND ADMINISTRATION</b> Zoning ..... Agricultural holdings..... Building permits ..... Compulsory purchase, taxation ..... Declarations, property administration .....
<input type="checkbox"/> %	<b>CADASTRAL MANAGEMENT (incl. strata titles)</b>
<input type="checkbox"/> %	<b>CADASTRAL SURVEYS AND CALCULATIONS</b>
<input type="checkbox"/> %	<b>MAPPING</b> Terrestrial mapping (on the ground)..... Photogrammetric mapping ..... Mapping administration ..... GIS (development and management) .....
<input type="checkbox"/> %	<b>ENGINEERING SURVEYS</b> Buildings ..... Roads ..... Utilities ..... Other engineering surveys .....
<input type="checkbox"/> %	<b>OTHER:</b> (pure management/development/IT) ..... Indicate category_____
<input type="checkbox"/> 100 %	

## **8. A TOOL FOR STRATEGIC PROFESSIONAL DEVELOPMENT**

The insight provided through the surveys described above is used as a strategic tool for professional development to manage the challenge of constant change. The strategies may be organisational, professional, structural or educational. The strategies therefore are developed in co-operation between the association and the university.

As a follow up on the latest survey the Danish Association of Chartered Surveyors (DdL) organised a two days seminar for the board members in DdL and the associated organisations. The result of the survey was used as a basis for understanding the challenges we are facing, where we are heading, and what kind of action may be needed.

One result of the seminar was that the profession is now “walking on two legs”. Even if the surveyors in private practice still dominate the perception of the profession, the areas of land management and IT-development, whether in the public or the private sector, is now fully established as a “second leg” of the profession. The seminar also provided a full consensus on having a unified profession of surveyors even if the professional profiles become still more diverse.

The survey shows that the areas of general management and also business and property economics are increasing. General management and business economics will be addressed through the university programme and through CPD opportunities. Property economics may be developed as new professional niche. This again relates to the educational profile where land and property economics currently become integrated in the programme.

The results of the survey are also used as a basis for the ongoing political discussions in DdL. Surveying the surveying profession, this way, provides a basis for professional development and a backbone for the profession itself.

## **9. FINAL REMARKS**

It is a key task for any professional association to serve their members and to improve and develop the general conditions for undertaking the surveying activities in society. The concept for surveying the surveying profession may be seen as a basic toolbox in this regard.

There is no doubt that the challenge of the future will be that “the only constant is change”. It is necessary to develop adequate tools for monitoring this change. The aim is to be capable not only of managing within change but managing the change itself.

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## BIGRAPHICAL NOTES

**Prof. Stig Enemark** is Head and Managing Director of the Surveying and Planning School at Aalborg University, where he is Reader in Cadastral Science and Land Management. He is Master of Science in Surveying, Planning and Land Management and he obtained his license for cadastral surveying in 1970. He worked for ten years as a consultant surveyor in private practice. He is Vice-President of the Danish Association of Chartered Surveyors and Invited Fellow of the Royal Institution of Chartered Surveyors, UK. He was awarded the Danish Real Estate Prize in 1991, and in 1994 he was appointed National Expert to the European Union within the areas of land management and spatial planning. He was Chairman (1994-98) of FIG Commission 2 (Professional Education) and he is an Honorary Member of FIG. His teaching and research interests are in the area of land administration systems and the application of cadastral systems for land management and spatial planning. Another research area is within project-organised educational and the interaction between education, research and professional practice. He has consulted and published widely within these topics, and presented invited papers at more than 40 international conferences.