Research Groups in the Institutional Research Structure

- A Multilevel Analysis

Aina Alvsvåg

Master of Philosophy in Higher Education
Department of Education,
Faculty of Educational Sciences

UNIVERSITY OF OSLO

30.05.2016
Research Groups in the Institutional Research Structure
– A Multilevel Analysis
Research Groups in the Institutional Research Structure – A Multilevel Analysis

Aina Alvsvåg

http://www.duo.uio.no/

Trykk: Reprosentralen, Universitetet i Oslo

IV
Abstract

This thesis examines drivers behind the use of research groups at the University of Oslo. It analyses the development of research groups from organic working groups used primarily in experimental sciences to today, where research groups exist in all fields of study at the university. The thesis uses such multiple data sources as document analysis and semi-structured interviews, together with secondary survey data to examine the phenomenon from a broad multilevel analysis, and looks at the phenomenon from organisational and steering perspectives. The thesis challenges the notion research groups are only a feature used in the experimental sciences because of particularities with their type of knowledge, and finds that all the faculty units have implemented research groups, and some have implemented policies that promote research groups. This development has happened due to external and internal pressure making research groups both necessary and a strategic advantage in obtaining resources. Research groups are also reliant on internal support to be accepted as an entity, they secure that by filling needed functions such as a functional framework for collaboration and research training, that way research groups gain legitimacy.
Preface

When I have been working on this thesis, it has at times felt like a never-ending story. But, through the process I have learned a lot about writing and conducting such a large project.

I have been working on the topic as part of a research project at Nordic Institute for Studies in Innovation, Research and Education (NIFU). Taking part in that has allowed me to get to know research on the Norwegian higher education sector better, and to learn about the research process from a project point of view. All the people I have met while working there made my time there an interesting and memorable experience.

By taking part in an interdisciplinary international Master’s programme has had its challenges, but I have also met and become friends with students from all over the world that I hope to stay in contact with. Working with an interdisciplinary curriculum has been new to me, but in these last years I have been introduced to a lot of interesting perspectives through literature and lecturers from fields other than my own. Some of the topics that we have been introduced to I find really interesting and will look into some more. If I am to pick one highlight from the Master’s programme it was definitely the summer school in Tokyo. It was a great trip and I will remember the culture, the food, the hospitality and the lectures for only two students, for a long time.

This thesis would not be possible without the valuable guidance of my supervisor, Agnete Vabø, from NIFU, to whom I am most grateful.

I would also like to thank my family who gave me the necessary support through this period, fellow students that I have met every day at Helga Eng, and my friends that have allowed me to think of other things when I needed to.

Luckily, it turns out that the never-ending story did end.

Aina Alvsvåg. Blindern, Oslo. 28.05.2016
Table of Contents

Preface .................................................................................................................. VII

1 Introduction ....................................................................................................... 1
  1.1 Research Problem ...................................................................................... 2
  1.2 Relevance of the Study ............................................................................. 3
  1.3 Thesis Outline ......................................................................................... 5

2 Analytical Framework ...................................................................................... 6
  2.1 Steering Models ....................................................................................... 6
    2.1.1 Network Governance ...................................................................... 7
    2.1.2 Resource Dependency ..................................................................... 8
    2.1.3 Neo-Institutionalism ....................................................................... 9
  2.2 The Discipline ......................................................................................... 11

3 Methodology .................................................................................................... 13
  3.1 Research Design ...................................................................................... 13
  3.2 Collaboration with NIFU .......................................................................... 13
  3.3 Triangulation of Data .............................................................................. 14
  3.4 Elements of Case Study design ................................................................. 14
    3.4.1 Embedded Single-Case ................................................................... 15
    3.4.2 Case Selection ............................................................................... 15
  3.5 Research Standards .................................................................................. 16
    3.5.1 Ethical Concerns ............................................................................ 16
    3.5.2 Validity and Reliability ................................................................... 16
  3.6 The Data Collection Process ...................................................................... 17
    3.6.1 The Document Analysis ................................................................ 17
    3.6.2 Collecting the Interview Data ......................................................... 18
    3.6.3 The Survey Data ........................................................................... 20
  3.7 Methodological strengths and limitations ............................................... 21

4 Analysis .......................................................................................................... 23
  4.1 Organisational Change .......................................................................... 24
    4.1.1 A Traditional Organisational Model ............................................ 24
    4.1.2 A Trend Towards More Academic Collaboration .......................... 25
    4.1.3 New Forms of Entities Appearing ................................................ 27

VIII
4.1.4 What is a Research Group? ........................................... 27
4.1.5 Research Groups Nationally. ........................................... 30
4.1.6 Research Groups at The University of Oslo...................... 31
4.1.1 Development of Groups at the University of Oslo ............... 32
4.2 Network Based Steering ................................................. 33
4.3 A Strategic Unit ......................................................... 34
4.3.1 External and Internal Funding Sources ............................. 35
4.3.2 Type of Resources .................................................... 39
4.3.3 Research Group as a Strategy ...................................... 41
4.3.4 Sufficient with Small Resources ................................... 42
4.4 A Legitimate Unit ....................................................... 43
4.4.1 Research Quality ...................................................... 43
4.4.2 Collaboration Within the Research Group ....................... 45
4.4.3 Networks and Specialised Fields .................................. 47
4.4.4 An Arena for Research Training .................................. 48
4.4.5 Recruitment .......................................................... 53
4.4.6 Research Groups and Educational Aspects ...................... 55
4.4.7 A Need for Collaborative Units ................................. 56
4.5 A flexible unit .......................................................... 56
4.5.1 Different Motivations ............................................... 59
4.5.2 Size of the Unit ..................................................... 61
4.5.3 Active Groups ....................................................... 63
4.5.4 Communication Practices ......................................... 64
4.5.5 Different Faculty Units Take on Research Groups .............. 65
4.5.6 Evaluations ......................................................... 67
4.5.7 A Continued Renewal ............................................. 68
5 Conclusion ...................................................................... 69
5.1 Implications ............................................................... 73
5.2 About the Thesis ........................................................ 76
5.3 Identified Research Topics ............................................. 77
Literature list ..................................................................... 81
Interview guide ............................................................... 84
Consent form ................................................................... 86
Figures and Tables

Table 1. Disciplinary Characteristics (Becher 1987 in Becher, 1994, p. 154)......................... 12
Table 2. Overview of respondents Fields of Science ...................................................................... 19
Figure 1. A Visualisation of the University Organisational Structure based on Clark’s Sections................................................................................................................................. 25
Figure 2. Visualisation of Research Groups ..................................................................................... 28
Table 3. Research Groups and Conduct of Research (Kyvik et al., 2015, p. 17)............................ 30
Table 4. Number of Research Groups at the University of Oslo .................................................... 32
Table 5. Quality of Research (Kyvik et al., 2015, p. 26) ................................................................. 44
Table 6. Academic Collaboration (Kyvik et al., 2015, p. 21) ........................................................... 47
Table 7. Ratio of Doctoral Candidates and Senior Researchers (Thune et al., 2012, p. 66) ....... 51
Table 8. Research Groups and Research Training (Kyvik et al., 2015, p. 27)............................... 52
1 Introduction

Research has gained importance in society over the last few decades. Today research has become an integral part of the knowledge society – in Norway, this is illustrated by the recent white paper on research, where knowledge and competence are stated as Norway’s most important competitive factors (Ministry of Education and Research, 2015, p. 5). In the coming years, the government will prioritise the research and higher education sectors, with a special priority on world-leading research environments. In concrete terms this means that the goal is that research alone should amount to 1 per cent of public expenditure GNP, and 3 per cent of all types of spending for research and development by 2030 (Ministry of Education and Research, 2015, pp. 5, 7, 40).

An effective research system is especially important for tackling the grand challenges of today, specific prioritised areas, and Norway’s position internationally as a knowledge nation. To be seen as a leading knowledge producer, there is much pressure to attain projects from the European Research Council. The focus on top-level research is seen as necessary to stimulate exertion of more influence and greater international visibility; hence more public funds are directed toward top-level research. This can be seen in relation to the argument of Ferlie, Musselin, and Andresani (2008, pp. 330-332) that higher education has become a policy area that governments are trying to steer in order to achieve other purposes.

For the higher education institutions this means that they have to be strategic actors, more so than before. Every organisational level at the universities is increasingly measured on success in attaining external research funds. As research is an essential part of performance indicators and international rankings, it appears that universities are experiencing increased pressure towards research performance.

This requires a research organisation that can support research efficiently at both national and institutional level. Such a research organisation would need to be able to organise research functionally, have a systematic research collaboration that is efficient in tackling such issues as producing research results and attaining new projects. The internal organisation of the universities is an area with a high degree of organisational autonomy and little direct vertical steering; therefore, organisational change is bound to happen from within the institutions. An
important note in this is that it is not only the institutions themselves that need to act as strategic actors, but that strategic awareness must spread to all the organisational levels.

One solution to organise research functionally and efficiently is through research groups. Research groups are known to be predominantly used in the experimental sciences as an organic, informal entity to structure research tasks. This means that traditionally research groups have not been used in fields of science other than technology, medicine and natural science, although exceptions do occur. In fields of science as the humanities and social science, the idea of scholarship has traditionally been different, where more individual forms are valued in the conduct of research and are therefore organised differently (Becher, 1994, p. 156). This means that the organisational change research groups may or may not represent could be profound for some, and that one need to understand the phenomenon.

Research groups are often mentioned in debates about university structure (Cappelen, 2015; Vidnes, 2016), but what they mean in practice requires more research. As Fumasoli and Stensaker (2013, pp. 488-489) argue, there is a need for more research in higher education research on how and to what extent universities are changing, and how policy reforms relates to change processes at the universities. Such a focus would shed light on intended and unexpected outcomes that may happen from reforms. Research groups are one issue that may be linked to reforms and policies either directly or indirectly, and is a possible example of organisational change or transformation. One issue research groups may be related to is that of such academic functions at a university as research, teaching, and dissemination, and for the academics themselves.

This immense focus on the research aspects of the university today is bound to have implications for the education and teaching aspects of the universities too. Strong research environments consolidated by research groups, may strengthen research-based education at Master’s programmes at universities or they may increase the specialization of academic functions among the employees that favours research over educational aspects.

### 1.1 Research Problem

The interest of this thesis is not directly compatible with the established topics on research groups in the literature, as most of the literature is seen as too limited in scope and mainly
relevant for the experimental sciences. It is not seen as useful in answering the research problem this thesis considers.

The aim of the thesis is to identify drivers that lead to the manifestation of research groups. These drivers can also be understood as drivers for organisational change at the universities. At the heart of this thesis is the research group as an organisational entity, and how such a unit relates to the rest of the academic functions at a university and in the organisational landscape.

In order to examine this it is necessary to look at the scope and extent of research groups. This descriptive task is needed to establish whether and how a possible manifestation is appearing. If it is, research groups would be appearing in a structure already marked by the other research entities at the university; the department and the faculty unit in particular – which are the units closest to the conduct of research. Therefore, the first sub-question is: how do research groups unfold at the universities and coexist with the faculty units and the departments? Once the scope of the use of research groups is established it is possible to assess the overarching research problem. The next sub-question is much related to the research problem: why have research groups been established and formalised? As indicated by the second sub-question there may be two ways that research groups are manifesting themselves: through establishing new research groups, or formalising existing informal groups.

The discipline and field of science are amongst the most important factors in determining academic career, conditions and identity. Discipline and field of science have been such a formative topic throughout the history of science that they need to be examined in relation to entities that may be gaining ground close to the conduct of research. Therefore, the last sub-question is: what place do disciplinary differences have in the manifestation of research groups?

1.2 Relevance of the Study

This study aims to explore the phenomenon of research groups in an institutional environment. It uses elements from explorative and descriptive case study design where such multiple sources of data and methods are employed as semi-structured interviews, document
analysis and secondary survey data. The study applies a multilevel emphasis, and looks at the University of Oslo. Particular emphasis is put on the natural science and the humanities.

This study touches upon organisational literature and higher education literature on research and academics in particular. The study is relevant as it studies a phenomenon concerning theoretical issues in higher education, and a current issue regarding research organisation and policy. As universities are expected to be strategic actors performing on many research indicators, it is important to gather knowledge to understand the organisational conditions that trigger and condition research.

First it is necessary to understand how the different organisational bricks make a university. Clark (1983, p. 37) is one author who has focused on this with his concept of the four sections; others are Michelsen and Vabø (2014), who looked at a specific brick as the department. It could be argued that research groups are just as much a brick in this complex structure, and so need to be understood as any other part of the tiers. Furthermore, research groups are a unit close to the conduct of research, perhaps the unit that academics deal with most. It is in their research groups that they meet colleagues regularly, and they conduct most of their research and daily work. It is a formative unit of the academic work environment.

Research groups are increasingly mentioned in public discussion of research organisations (Førland, 2015, p. 31; Mæland, 2016; Vidnes, 2016), and policy models are designed to encourage them at several faculty units (Buch, Federhofer, & Kristiansen, 2016; Lekve, Aanstad, Piro, Carlsten, & Spilling, 2014, p. 76). To have a knowledge-based understanding of current policy propositions in higher education is one task scholars in the higher education sphere should take on. Fumasoli and Stensaker (2013, p. 488) have claimed that the users of higher education research internally at institutions, as opposed to national policy makers, have been somewhat neglected and therefore more organisational studies are needed to shed light on the core activities as teaching, research and services, and how they are coordinated. One reason for why this is more important is because of the increased competitive pressures for obtaining funds, students, human resources and reputation.

Research groups are only one part of a trend of new entities appearing in the sector. As the expectation toward more collaboration gains ground, different types of entities are appearing. Either to enable more collaboration between academics or the private sector, this trend may be intertwined with such other issues as more interdisciplinary pressure. Nyhagen and Baschung
(2013, p. 410) say that organisational structures at the university have arisen due to pressure from society, and not through institutionalised norms from professional or disciplinary arenas. This involves organisational forms such as doctoral schools, research centres, research groups, research networks, technology transfer offices and fringe organisations. Fringe organisations are partly related to the university and answer to external actors. These may challenge the steadfast traditional structure at universities.

If there is some degree of steering behind this phenomenon one needs to understand from whom, how, and why that takes place

1.3 Thesis Outline

This chapter has presented the topic of this thesis, the research problem and sub-questions, and why the thesis is relevant for higher education and research literature.

In the next chapter, chapter two, an analytical framework has been constructed. This consists of several steering models such as network governance, neo-institutional theory, and resource dependency. In addition to this, the discipline is important in understanding how research organisation has developed, and how that process is linked to epistemology.

Thereafter, chapter three presents the methodology used. The research design is briefly presented, then how the thesis came to be in collaboration with the Nordic Institute of Innovation, Research and Education (NIFU). Why it qualifies as triangulation of data, what makes it a case study, research standards, and the data gathering process is discussed throughout the chapter.

In chapter four an integrated presentation of the data, analysis and relevant literature is given. In the beginning of the chapter changes in higher education are presented along with the extent and scope of research groups nationally and at the University of Oslo. This is followed by a discussion of how policies that lead to the phenomenon relates to the state and other stakeholders. The remaining parts of the chapter argue how research groups can be seen as a strategic unit, a legitimate unit, and a flexible unit.

Finally, chapter five starts off with a summary of the findings in the previous chapter, first as to how it answers the research questions. Then it presents the theoretical and practical
implications of the thesis. Then there is a brief review of the thesis’ strong points and limitations. At the very end the identified research topics are presented.

## 2 Analytical Framework

In order to answer the research problem the thesis employs different perspectives on steering and organisational processes as resource dependency and neo-institutional theory. These are employed as they contribute to understanding why organisational change takes place and what forces are in play to keep things as they are and to change them. Network governance is one form of steering model that allows us to understand the influence and policy logic that are at play internationally, nationally and at the institution. The knowledge types and cultures that have developed are an integral part of understanding academic organisation and differences, and are therefore included.

### 2.1 Steering Models

According to Ferlie et al. (2008, p. 326) steering in higher education means “*Externally derived instruments and institutional arrangements which seek to govern organizational and academic behaviors within higher education institutions. They are usually but not always emanating from the state.*” How decisions are reached and how influence occurs is at the heart of understanding steering.

A simple distinction between types of steering is between vertical steering and horizontal steering. Vertical steering is a top-down approach, often from a ministry or an institution that uses regulations to steer subordinate units, although not excluding softer approaches. Horizontal steering is between actors at similar levels as institutions, committees, and evaluations. It is about how steering occurs between actors that are not subordinate to one another, but rather at the same level. It may be that a certain agenda is channelled through an evaluation of a research programme or from a research allocation committee.
This thesis uses network governance, resource dependency and neo-institutional theory as steering models. They can account for different perspectives regarding both externally-derived steering and institutional arrangements.

Ferlie et al. (2008, p. 330) argue that European governments have increasingly tried to steer higher education toward consistency with national policies over recent decades. This is because the idea of the knowledge economy has become prominent, international competition with regards to knowledge production, and the role higher education has in the training of candidates, and knowledge that the whole society depends upon. The state thus wanted more control of a sector that consisted of self-governed entities where the state had little influence. Ideas from new public management were seen as answering the need for control and steering. For the research sector this has meant increased management of the sector, output emphasis, and incentive-based measures that are present today.

Concepts like vertical and horizontal steering, and the contextual information about steering in higher education, relate to the research problem of identifying drivers, and the sub-question of why groups are established and formalised.

2.1.1 Network Governance

In network governance the coordinating power is shared between social actors. Network governance takes into account complexity and includes more actors than what vertical steering approaches do. It holds that powers are diffused to not only the national state, but also to lower and higher tiers (Ferlie et al., 2008, p. 337). Network partners are interdependent and include institutions, agencies, ministries, and EU actors, but also at even such lower levels as research groups, evaluating committees and certain subject programmes at the Research Council of Norway.

According to (Ferlie et al., 2008, pp. 337-338) network governance is based on high trust, repeated interactions, and a clannish culture, where often knowledge and best practice examples are shared. The network develops self-organising and self-steering capacity. The role of the state is distinctive only as a relationship facilitator: it brings actors together, builds trust, arbitrates and verifies interactions. There is a development of more networks between institutions and other social actors. These networks develop a substantial self-steering and organising capacity, contrary to being managed from above. Best practices, organisational
learning, leading-edge knowledge, joint problem recognition and solving capacity are common features that drive up quality in the system. The contexts in which the institutions operate have become more and more complex. The institutions do not solely report to a national ministry and its agencies, but also to the EU level and other actors. Internally there would be an emphasis on team-based approaches rather than management typical of new public management. Teams, rather than individuals, would tend to be rewarded for good performance.

Network governance contributes to make sense of national and international pressure and logics that differ from traditional state steering, which is helpful in identifying drivers for the manifestation.

2.1.2 Resource Dependency

Pfeffer and Salancik argue that “Organizations are inescapably bound up with the conditions of their environment” (1978, p. 1). The ability to acquire and maintain resources is what determines both organisational success and survival. Organisations constantly try to find the balance of maintaining autonomy and discretion versus the environmental constraints and control that they have to deal with (Gornitzka, 1999, p. 7). The organisations are dependent on the resources the environment offer. The resources may be financial resources, but not necessarily.

Behavioural actions are limited by constraints – which are present when actions are not random. It may be in form of physical realities, social influences such as information and cognitive capacity and by personal preferences. Constraints are always present in social interaction, but they may also be shaped in a manner to reach a certain outcome of other organisational behaviour (Pfeffer & Salancik, 1978, pp. 14-15).

In general, organisations would seek stability and predictability. The flipside of this is that as an organisation may become reliant on only one supplier, this may leave them in a vulnerable position. When resources become scarce – either through more competitors or a change in the supply of resources as changed criteria – organisations face several options to survive at all. They may seek resources elsewhere, change according to new criteria, or refuse to take any action. This shows how organisational behaviour is reliant on particularities in their social environment (Pfeffer & Salancik, 1978, pp. 18-19, 46-47). The organisations tend to be
responsive towards external changes, which make the change capacity high. Although it is not necessarily an automatic response, the organisations may take an active role in decisions and pursuing resources by making strategic and active choices towards those on whom they are dependent (Gornitzka, 1999, p. 7). To be effective is crucial for that, effectiveness is understood as an organisation’s ability to create acceptable outcomes and actions (Pfeffer & Salancik, 1978, p. 11).

In facing a social environment and its constraints the possibilities managers see are significant. They can take a role as an active manipulator of constraints or as a processor of the demands an organisation faces. A manager can in those roles enact or create more favourable circumstances, or merely conform to the imposed constraints (Pfeffer & Salancik, 1978, pp. 18-19).

Some have pointed to the many converging points between neo-institutional theory and resource dependency (Gornitzka, 1999, p. 7; Oliver, 1991, p. 147), despite that the latter may be seen to be more externally-oriented than the former. They converge on the view that the organisation’s choice is constrained by multiple external pressures, environments are collective and interconnected, survival depends on responsiveness, organisations seek stability and predictability, organisations seek legitimacy and that they are interest-driven. In sharing some fundamental ideas it makes it possible to see the theories as compatible, and so can be used together.

Resource dependency could be used in answering the research problem about drivers and the sub-question concerning formalisation and establishing of research groups.

2.1.3 Neo-Institutionalism

Neo-institutionalism holds that the institutional environment is important in determining organisational choice. Logic of appropriateness, legitimacy, and isomorphism are some features of neo-institutionalism. Institutions may be regulatory structures, governmental agencies, laws, courts, and professions according to Scott (1978, p. 498). It may be a university, or a sub-unit at a university. This thesis emphasises more the processes found in neo-institutionalism as legitimisation more than what is or is not an institution.
An underlying idea in neo-institutionalism is how institutions influence human behaviour through rules, norms and other frameworks. March and Olsen (2011, pp. 1-2) see that rules are followed if they are seen as natural, rightful and legitimate. Actors act by what they see as appropriate in a given situation; this has been termed as the logic of appropriateness. Actors tend to fulfil expectations in given roles if it is within an accepted framework.

To survive, an institution needs to establish a legitimate place in the environment and internally. Meyer and Scott (in Deephouse & Suchman, 2008, p. 2) define organisational legitimacy as the cultural support for the organisation. It may be through arrays of established cultural accounts explaining the existence, functioning and jurisdiction of an organisation, but may also mean the lack or denial of alternatives. If an organisation is fully legitimate no question would be asked regarding its use of resources or goals. Others have theorised from this that questioning is likely to happen when familiar organisation is unsatisfactory or when a satisfactory organisation is unfamiliar (Deephouse & Suchman, 2008, p. 2). Legitimacy can also be seen in relation to other theoretical positions used in this thesis such as Pfeffer and Salancik (1978, p. 178), who hold a “negative” position on it, holding that legitimacy is more noticeable when it is absent than present.

The literature has in general emphasised conformity as opposed to radical change (Dimaggio & Powell, 1983). Conformity increases the chances of survival of the organisations (Oliver, 1991, p. 150). Therefore, organisations are not prone to change; they are more likely to remain the same. If change is to happen it must be seen as legitimate.

**Isomorphism**

The concept of isomorphism explains why organisations become alike, and how it occurs. Powell and DiMaggio (1983, p. 147) saw a move away from structural change being driven by competition and effectiveness. Instead they “Contend, that bureaucratization and other forms of organizational change occur as the result of processes that make organizations more similar without necessarily making them more efficient”. Their basic argument is that individual efforts to deal rationally in a context with uncertainty and constraints often lead to homogeneity in structure, culture, and output at an aggregate level.

There are three types of mechanism that lead to institutional isomorphism. That is coercive, mimetic, and normative isomorphism (Dimaggio & Powell, 1983, pp. 150-152). Coercive
pressure is about political influence and legitimacy. Coercive pressure includes both the formal and informal through organisations that exert influence on other organisations. It could be due to dependency or cultural expectations. Mimetic pressure is about responses when dealing with uncertainty and ambiguity. Modelling is the response when goals are ambiguous and solutions are unclear. In such a situation, organisations may model themselves after organisations that are seen to be more legitimate or successful. This can be used to understand the best practice mechanism. Normative pressure is about how professions lead to isomorphism. Professionalisation leads to isomorphism through formal education and networks. From formal education a professional would get a cognitive base and legitimation, and from professional networks – which are transgressing organisational boundaries – one sees how ideas and models spread across organisations, and do so rapidly.

Concepts from neo-institutionalism as legitimacy, logic of appropriateness and isomorphism show some mechanism internally in organisations. To succeed with organisational change internal support is needed; how that occurs needs a sound understanding to answer the sub-question of how research groups unfold and coexist with other entities at the institution. In addition to that, legitimacy and isomorphism helps us understand why research groups have been established and formalised.

### 2.2 The Discipline

Henkel (2000, p. 166) argues that the discipline is one of the main fundamentals for academic identity, as it gives a source of meaning and self-esteem. According to Becher (1994, p. 153) both cultural and cognitive aspects of discipline are inseparably intertwined. Despite the relationship between culture and cognition being a complex question, one could understand the disciplinary practices as partly conditioned by the topic of enquiry. The knowledge type – a cognitive aspect – one is working with, gives certain conditions that have been seen to be part of shaping organisational practices.

Although each discipline does possess certain traditions and peculiarities, many disciplines share traits and can be said to form a disciplinary grouping together with other disciplines. A much-used typology to differentiate broad disciplinary groupings is that of Biglan and Feishman (1973, pp. 201-202) which uses the concepts of hard-soft and pure-applied terms to identify different disciplinary groupings by their epistemological nature.
A hard-pure disciplinary grouping would be the natural sciences, and a soft-pure disciplinary grouping would be the humanities and social sciences. The typology can be used to identify individual disciplines, but that makes the distinction less neat. Below is shown an overview of traits that are either associated with the nature of knowledge or the nature of the disciplinary culture.

Table 1. Disciplinary Characteristics (Becher 1987 in Becher, 1994, p. 154)

<table>
<thead>
<tr>
<th>Disciplinary grouping</th>
<th>Nature of knowledge</th>
<th>Nature of disciplinary culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure sciences (e.g. physics); 'hard-pure'</td>
<td>Cumulative; atomistic (crystalline/tree-like); concerned with universals, quantities, simplification; resulting in discovery/explanation.</td>
<td>Competitive; gregarious; politically well-organized; high publication rate; task-oriented.</td>
</tr>
<tr>
<td>Humanities (e.g. history) and pure social sciences (e.g. anthropology); 'soft-pure'</td>
<td>Restorative; holistic (organic/river-like); concerned with particulars, qualities, complication; resulting in understanding/interpretation.</td>
<td>Individualistic, pluralistic; loosely structured; low publication rate; person-oriented.</td>
</tr>
<tr>
<td>Technologies (e.g. mechanical engineering); 'hard-applied'</td>
<td>Purposeful; pragmatic (know-how via hard knowledge); concerned with mastery of physical environment; resulting in products/techniques</td>
<td>Entrepreneurial; cosmopolitan; dominated by professional values; patrons substitutable for publications; role oriented.</td>
</tr>
<tr>
<td>Applied social sciences (e.g. education); 'soft-applied'</td>
<td>Functional; utilitarian (know-how via soft knowledge); concerned with enhancement of semi professional practice; resulting in protocols/procedures.</td>
<td>Outward-looking; uncertain in status; dominated by intellectual fashions; publication rates reduced by consultancies; power-oriented.</td>
</tr>
</tbody>
</table>


As such, disciplines in the natural science would embody competitive, gregarious, well-organised, high publication rate and task orientation as part of the disciplinary culture. It is expected to be well-organised and require a high degree of collaborative work. There are however important differences between the specific disciplines. In chemistry, one team would typically consist of tenured staff, post-doctoral staff, doctoral students, and technicians, and require laboratories and physical infrastructure. In theoretical mathematics not much more than a desk, paper, pencil, blackboard and chalk would be required (Becher, 1994, p. 154; Becher & Trowler, 1989, p. 158). The humanities are in general much more individualistic, they seek understanding, are loosely structured, have traditionally had low publication rates and are much more person-oriented (Becher, 1994, p. 154). Traditionally they have been working much more on a solitary basis.

The disciplinary differences perspective answers the sub-question of what place disciplinary differences have in the manifestation of research groups.
This chapter has presented the analytical framework of the thesis. An analytical framework is however limited by the methodology used. The methodological choices made early and throughout a project determine the sort of data the thesis relies on, which is the foundation of an empirical thesis. The next chapter presents the methodological choices made.

3 Methodology

3.1 Research Design

The goal of this thesis is to identify drivers that lead to the manifestation of research groups. To do so it is used multiple data sources to look at the phenomenon at different levels and in different fields of knowledge. Several methods are used to identify such drivers; semi-structured interview, document analysis and survey material.

The University of Oslo is used as a case in the qualitative data gathering. The leading position of the university when it comes to research output is one reason for the case selection, as it requires an effective research structure to maintain the position. In the interviews a particular emphasis is put on the two faculties of humanities and mathematics and natural sciences, as they represent different disciplinary groupings; hard-pure and soft-pure.

The primary data that have been gathered for the purpose of this thesis alone are mainly qualitative in nature, and consist of document analysis and semi-structured interviews. The study also uses secondary survey data from Nordic Institute for Studies in Innovation, Research and Education (NIFU) as a backdrop for the qualitative material. Together these sources of data will be triangulated with the purpose of assessing the consistency of the findings.

3.2 Collaboration with NIFU

This thesis is part of a research project at NIFU. The collaboration started with an offer to take part in a project on research groups with my thesis work. NIFU had at that point already
available survey material on research organisation and research groups, and was interested in qualitative perspectives on the same topic. With this as an offer, a research project was designed with the purpose of looking at disciplinary differences and research groups.

Benefits of taking part in such a project have meant a defined project, access to material and expertise, a practical interest in the project, and gaining insight into the research process at a research institute. Much of this project fits in a readily defined framework; still the project has been mine and my responsibility. A thematic proposal was presented to me, but it was my choice of case, research problem and theoretical choices that have decided the direction of the project. The research project at NIFU has so far resulted in a report by Kyvik, Reymert, Vabø, and Alvsvåg (2015), a chapter in a book (Kyvik & Vabø, 2015a) and a popular scientific article (Kyvik & Vabø, 2015b).

3.3 Triangulation of Data

When data material from different sources is converged it makes it easier to assess the consistency of a finding (Yin, 2013, p. 241), which strengthens a case study. To make the most out of different data sources the data are presented together in an integrated synthesis section in the analysis chapter. This merger of the data allows for a congruent presentation (Yin, 2013, p. 121) and makes it a data triangulation, as opposed to the use of multiple sources of data.

Using different data sources allows for different epistemological understandings of the same phenomenon. Where the survey data provides us with a general understanding across disciplines of the phenomenon’s perceived effect on different functions, the main purpose of the document analysis is to acquire data from informative web pages and on the purpose of research groups. The conducted interviews allow us to understand some perceptions concerning how the research groups affect academics in detail in their daily work and in their conduct of research.

3.4 Elements of Case Study design

In this thesis how and why questions have a central position. According to Yin (2013) the preferred strategy in such a scenario is a case study design – when it also entails a contemporary phenomenon that a researcher do not control, which is situated in a real-life
context. All these elements are present in the thesis; however, it only uses elements of a case study design and is not to be reckoned as a full case study design. A full case study design would have been more comprehensive and had more extensive selections of perceptions on the phenomenon. The selection in this thesis is too small and is not able to give a full account of, for example, all perceptions there are on research groups.

3.4.1 Embedded Single-Case

The case can be seen as having elements from *embedded single-case study design* study that involves units of analysis at multiple levels (Yin, 2013, pp. 53-56). The attention is not only put at an institutional level, but also at the levels of the faculty and departmental, specific research groups, and academics. It is further complicated through the inclusion of a national aggregate of academics’ perceptions, as well as linking all of this to national and international research policy agendas. The research structure at universities is more complex than may exist at other organisations, and it is therefore an advantage to use an embedded single-case approach. Using units at multiple levels allows for examining the interplay between levels. After all, it is how these levels are connected that determines the processes that occur.

3.4.2 Case Selection

The University of Oslo has been selected because it is a leading research-intensive university in Norway. The leading position is not only as an institution, but may also be specific to research fields through departments, research groups, and research centres that are at national or international top level. It is expected that in this context it is central to maintain such a position and continue to receive the necessary funding. An emphasis will be put on the Faculties of Humanities, and the Faculty of Mathematics and Natural Sciences. These two faculty units have been chosen because of their complementary nature regarding the nature of their knowledge. One of them represents the hard-pure disciplinary grouping, and the other the soft-pure disciplinary grouping. In concrete terms that mean that the interviews will be conducted at these two faculties. The two fields of study work as poles that might shed light on different perspectives.

It seems that research groups have appeared especially in the last decade at the University of Oslo, meaning that enough time has passed since the initial implementation of research groups for some experience to have been gained; hence a study of it is appropriate.
3.5 Research Standards

3.5.1 Ethical Concerns

What was important during the thesis was ensuring the respondents’ anonymity during the process, and giving proper information on what the study will be used for. The reasons for promising anonymity were to get access to respondents and to get them in a position where they could talk freely. It was decided that the respondents would be identified according to their faculty unit throughout the thesis. This was done with the purpose of not revealing specifics concerning careers or research groups that identification according to department could have revealed. As a result, some interesting findings were identified, but not possible to include fully in the study due to the protection of the respondent’s anonymity. It also means that one loses the chance of explaining some of the context as specific discipline or department could have done.

A consent form was sent with the interview request (appended). That was done in order to inform the respondents about the project, the purpose of the interviews, and practical information about the project. This form was based on a template available at The Norwegian Social Science Data Service. As the study is part of a research project, permission from the same agency was obtained. The permission is needed when studies have to do with privacy issues, as the interviews might have in this thesis.

3.5.2 Validity and Reliability

Kleven understands validity as property of inferences, where the relevance of different types of validity depend on the methods used (2008, p. 219). This is based on an understanding that quantitative and qualitative research strands do share some ontological and epistemological positions concerning validity. Below, relevant types of validity for this thesis are discussed:

*Construct validity* – Construct validity should be understood as how well the indicators used represent the constructs they are meant to represent. The congruent evidence given by triangulation of data in this thesis strengthens the construct validity, as it gives several measurements to the same phenomenon (Yin, 2013, p. 121). *Internal validity* – internal validity is about how causal inferences are drawn (Kleven, 2008, p. 227). Sound theory-driven propositions are at the heart of internal validity, as they strengthen the causal
interpretations of a phenomenon. The process for qualitative approaches is a bit different from quantitative, but it also involves the dynamic of linking empirical findings with theoretical framework. The theories used in a thesis need to be able to explain the causal effects of a phenomenon. Again, triangulation of data from different levels helps avoid mistakes in internal validity (Yin, 2013, p. 47) – having to crosscheck a phenomenon at several levels works as a safeguard to maintain internal validity. External validity – External validity is about whether or not inferences made in one study apply to other contexts, through generalisation and transferability (Kleven, 2008, p. 229). This study does not aim to be generalisable – as the data gathered by the thesis writer are of qualitative nature sources, which are not generalisable. When it comes to transferability some findings may of course be transferable, but too little is known about the phenomenon to claim that the inferences drawn are not context-specific. Although a central purpose of explorative research is to identify more research topics which may often be linked to inferences made.

Reliability – is about having a transparent process in order for other researchers to be able replicate the process. This is ensured by documenting the steps taken during the data gathering and analysis. A goal of this is to make fewer errors and not be biased as a researcher (Yin, 2013, p. 49). Examples of ensuring reliability are to include the interview guide and describe what experiences were made during the interviews. Qualitative studies may however not lead to the same result in replicated studies; therefore it is the process that is to be replicated, and not a certain outcome.

3.6 The Data Collection Process

3.6.1 The Document Analysis

The documents that have been gathered are available from the University of Oslo’s website. Documents were collected through the summer and autumn of 2014. The purpose of the document analysis was to gather basic information about research groups’ formation process at the University of Oslo. The documents were information pages on research groups and the research organisation from the faculty units’ webpages, some articles in the media, strategic documents, case documents from various meetings, and two evaluations of research group systems. Most of the documents were current from 2014. Where it was possible older documents were obtained, but often such documents were not available.
Gathered from the documents was such basic information as years, number of groups, number and type of members, and criteria. Some of this information was numeric in nature, and so the document analysis was not merely used as a qualitative tool, but also included simple numeric gathering. Another type of information was more text-based, such as strategic and case documents.

The faculty units communicate quite differently concerning research organisation through their websites. They all have information about each research group, but they differ on such issues as updated internet sites, understanding of what different units are, and how much policy documentation about their organisational structure is available. It appears that the faculty units have different interpretations of whom and what is labelled members and research groups. This variation is important for the data quality. It does show that a complex structure is not necessarily comparable at faculty level on all dimensions looked at in this thesis. Although this is a shortcoming, it does provide the readers with a general output on the differences, and says something about the faculty units take on research groups, and is therefore included.

### 3.6.2 Collecting the Interview Data

In total nine interviews were conducted, between April and October 2015. Three interviewees were women, and six were men. The respondents belonged to six different departments. All were senior researchers who were or had been involved in leading a research group or a section. Most of the respondents had the rank of professor, while two were associate professors.

An interview guide was made and a consent form (appended) was designed in the preparations. In making the interview guide the idea was to make it an operationalisation of the analytical framework. It included sections on formation and history of research groups, funding, political steering, and internal life within the group, pursued goals, the discipline, and perceived advantages and disadvantages. A summary report was made on each of the interviews.
Considerable time and effort was put into getting responses to the interview requests. It takes time to identify possible respondents, formulate an interview request, send out requests, and follow up the answers. After three rounds, enough respondents had been recruited from the humanities, but too few had been from the natural sciences; this posed a challenge that took considerable time. In the end a particular department was targeted because it would give more insight into an experimental discipline. It turned out that it was easier getting respondents from this field, and more respondents than were needed offered to take part. At some point a few high ranking research leaders were also contacted both for interview purposes and to work as a possible gateway to other respondents, but this attempt was not successful.

Interviewing research leaders can be seen as interviewing elite groups. According to Brinkmann and Kvale (2015, p. 171) it is both hard to get access to this type of respondent and there is a possible power asymmetry present in the interview situation – which means more power to the respondent than the interviewer. The following quote illustrates a typical interview situation with elites: “Elites are used to being asked about their opinions and thoughts, and an interviewer with some expertise concerning the interview topic may provide for an interesting conversation partner” (Brinkmann & Kvale, 2015, p. 171). This quote was applicable to some of the interviews conducted for this thesis. To some degree the power

---

Table 2. Overview of respondents Fields of Science

<table>
<thead>
<tr>
<th>Faculty unit</th>
<th>Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Humanities</td>
<td>Professor</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
</tr>
<tr>
<td></td>
<td>Associate professor</td>
</tr>
<tr>
<td>Faculty of Mathematics and Natural Sciences</td>
<td>Professor</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
</tr>
<tr>
<td></td>
<td>Associate professor</td>
</tr>
</tbody>
</table>
asymmetry did shift in some interviews towards the respondents. It was experienced that the respondents were in general easy to get talking, and that the interview guide was not as much needed as anticipated. When elite groups are interviewed it may be difficult to take control of the interview situation and to steer an interview. This is a contrast to how it is to interview more vulnerable groups, which may be hard to get talking at all.

One particularity of interviewing professors is that they might be opinionated on research methodology. This may result in different expectations to an agreed-upon interview – as happened once throughout this work when a potential respondent did not want to participate when hearing more about the purpose of the interview. Not going ahead with an interview is a valid outcome of different expectations of what it is one takes part in – and this outcome was unproblematic. However, the experience led to some reflections concerning the conditions of a successful interview. First, it is fundamental that a shared methodological understanding is present between the interviewer and the respondent. Second, the integrity of the respondents should be present in the interview process. Third, a clear and concrete communication upfront concerning what the interview would include is important. Fourth, one needs to be assured that the potential respondent know what they agree upon – more than merely saying yes.

A factor that seemed to appear is a possible recruitment bias. It is suspected that those consented to an interview were predisposed in some way to do that. Having strong opinions or perception on the topic based on their own experience seemed to be a common feature in all the interviews. A possible reason for that is that research groups may be central to their own success, as they are linked to obtaining resources. Another reason is how the formation process of research groups has taken place; several of the respondents have been part of forming groups and thus may believe in them. From this it does seem likely that there may be a slight recruitment bias in action. An implication of this is that the perspectives here may be both more thought-through and opinionated than those of other research leaders – that could go either in a critical direction and a more positive direction of the phenomenon.

3.6.3 The Survey Data

The survey data mentioned in this chapter are the published material in Kyvik et al. (2015). This is from a regular survey on Norwegian academics produced by NIFU. In 2013 NIFU included a section with questions concerning research organisation – research groups and networks were amongst other topics. In this study these data serve as a backdrop which makes
it possible to triangulate data sources. The data are *secondary data* – collected by another entity.

This thesis uses the tables from the so-called old universities in Norway – those situated in Bergen, Oslo, Trondheim and Tromsø – which makes 1743 responses in total (Kyvik et al., 2015, p. 12). The responses are only from academics with permanent positions in the Norwegian university sector.

### 3.7 Methodological strengths and limitations

A study is always reliant on the sources available and the methods chosen to find good data. The thesis looks at the phenomenon at different levels which makes it possible to assess the interplay between different levels, and how for instance influence and steering is interconnected at all levels. As academics not only deal with one specific level, they are themselves part of the different levels through committees and different office positions. That has been important in designing the study, and is seen among the strengths of the study.

When it comes to the different data sources they provide us with different advantages. The survey data are useful in that they give a general output on the phenomenon nationally; the document data in that they provide us with descriptive information on the phenomenon at an institution and how it has developed there. The interview data give individual accounts as to how research groups work internally, related to resources and legitimatisation processes. This allows for different epistemological perspectives to be used together in triangulating the data.

The extensive data collection and availability is seen among the strengths. A thorough document analysis from all the faculty units, and conducting nine interviews, is considerable for a Master’s thesis. In addition, the thesis had access to tables from a survey with 1743 responses from the relevant segment.

The natural sciences and the humanities have had an equal place in the research design of this thesis. With the nine conducted interviews this has been useful as it allows for an integrated comparison of the two, which strengthens the analysis of both. While the natural sciences have represented the research group model as we are used to thinking of it, the humanities represent organisational change in a better way. The respondents in the humanities have tended to have more elaborate thoughts on research groups, as it is not just the way to do it
there. They have had to go back to the basics, to understand the idea behind research groups and to make it their own in their own specific setting. For that reason, the humanities have had a prominent place in this thesis as there is both a break with the old and they have intended to shape research groups after their own needs.

Another strong point of the study concerns the timespan between when research groups started to appear and be formalised to when this study is conducted. Enough time had passed to obtain useful information.

In any research design there will however always be limitations too. Some of the limitations of the data are to do with selection and data quality in this thesis.

When making a selection one automatically excludes other groups. This was done when selecting the University of Oslo and by giving two faculty units special emphasis. The interviews were only done with research leaders. It is limited to this institution, the two fields and the research leaders interviewed. In practice that means that the interview data do not directly assess other fields of studies as thoroughly, or other groups as PhD candidates, middle career researchers, students, emeritus positions and external partners which may sit with other perceptions.

The data quality is a particular concern when it comes to the faculty units’ practices of sharing information through documents. The practices differ widely, and to assess if this reflects upon policies, different practices in accessible information or other reasons can only be speculated on. The reasons for that are suspected to be many. It does make it harder to obtain comparable information from the different faculty units, as they may label issues differently.

The next chapter presents an integrated analysis, where the data are simultaneously discussed with the literature on research groups, and the analytical framework.
4 Analysis

This chapter will address the research problem of identifying drivers that lead to the manifestation of research groups and the sub-questions of how the research groups unfold at the university and coexist with the faculty units and the departments; why research groups have been formalised or established; and what place disciplinary differences have in the manifestation of research groups. The most important findings from my data collection will be presented in the light of relevant theories and literature according to thematic topics.

Kyvik et al. (2015, p. 7) see that research groups have become more important partly because of a steady growth in research as a core activity in higher education. For the institutions and academics working in the sector, research is what they are being measured on today. Another reason is that the use of research groups may be linked to the fact that the size of the departments has increased – often due to restructuring processes and an increase in the number of staff and PhD candidates. As the size has grown the departments may not be as suitable for coordinating research efforts as they once were – they may simply be too big, and expected to fulfil too many other tasks regarding education and administration. In a situation where the importance of research has grown and the department has grown – to maybe too large a unit to support research – it is seen that there may be a mismatch between ambitions for research and the units that are in place to support that development. If one should be able to compete, this mismatch needs to be addressed.

It is here that research groups are seen to be one of the solutions. Research groups are no new entity, they have been common in highly structured experimental fields to organise research for some time. This may have taken informal forms, where working organically and practically to solve some tasks and problems has been normal.

However, in (Kyvik et al., 2015, p. 7) it is seen that research groups are gaining ground outside of the traditional sphere in the natural sciences and medicine. More and more accounts are appearing of institutions implementing research groups in different ways all over the national context.
4.1 Organisational Change

Research groups do not appear as a blank sheet which is the university organisation where no well-trodden paths exist in the organisational landscape. On the contrary, research groups are seen to operate within the systems already in place as part of a trend based on more academic collaboration; where research groups are only one of several entities. After these points have been discussed, this thesis presents its understanding of research groups.

4.1.1 A Traditional Organisational Model

In his work on the higher education system, Clark (1983, p. 37) calls the vertical alignments in a university enterprise sections. Horizontal differentiation on the other hand is what constitutes the different fields of knowledge. Typically, vertical alignment occurs at two levels, but since universities often are complex organisations there may be more levels, because substructures tend to develop. One of the two levels is the faculty, which either is structured around a profession or is a set of multiple disciplines – roughly the same as disciplinary groupings. The other level is the department, which is narrower in its nature, in which a subject either is a speciality within a profession or a whole basic discipline. The department is said to be the basic building block or operating unit of the university’s primary tasks. Although the model described by Clark gives a neat impression of the structure, it is often a fairly complex structure that makes a university. In practice it is not uncommon to have some kind of subunits that work under departments – which could be research groups or other entities. The scale, formality and format of such subunits vary, and are partly what this thesis examines.

According to Henkel the basic unit is the department which embodies the discipline by providing a physical structure and a set of accredited, collective functions. Here the academics consolidate their disciplinary identities (2000, p. 19). The department is the carrier of epistemic culture and disciplines where specific methods, topics, theories are of concern, and is part of ensuring the presence of knowledge paradigms (Michelsen & Vabø 2014, p. 96). A dominant idea for the department was as an organisational unit for education and research – but in Norway departments tend to be administrative units for education, rather than research.
The department can also be seen as an administrative unit and a local political entity trying to secure resources and control in the university organisation. In parts of the sector the departments can be seen as a flexible unit for a broad array of different disciplines, research specialties, and study programmes that can be flexible according to needs. In other parts they can still be seen as cathedrals, characterised by close connections between discipline, research and study programmes (Michelsen & Vabø 2014, p. 110).

The forming of departments has happened in different periods according to field of study; medicine and natural sciences formed departments and laboratories at the end of the 1800s, whereas the social sciences and humanities formed departments as late as in the 1950s and 1960s in Norway (Michelsen & Vabø 2014, p. 97). After that, the departments have been the subject of many restructuring processes, influenced by such factors as the expansion of the student body in the ’60s and the pressure to deliver in the quasi-market that was established as a result of new public management over the last decades, according to Michelsen and Vabø (2014, pp. 104-105).

4.1.2 A Trend Towards More Academic Collaboration

The modes in which research and higher education operate within may be said to have been in a changing process for some time. Gibbons et al. (1994) claimed two decades ago that there is a move from mode 1 to mode 2 in knowledge production. The knowledge in mode 1 is
discipline-based and tends to emphasise the difference between fundamental and applied knowledge; in mode 2 knowledge is carried out in the context of application and is marked by heterogeneity and transdisciplinarity (pp. 4,19).

There is an increase in problem-oriented research as opposed to free enquiry-driven research. Research is less financed through general budgets and more through specific research programmes. This means that researchers and research skills are becoming more specialised, more specific expensive equipment is needed, and there is larger focus on the financial costs throughout a project (Gibbons et al., 1994, p. 78).

Bozeman and Corley (2004, pp. 601-602) have identified frequent reasons given for collaborative research that have been used in this literature. Those are: access to expertise; access to unavailable equipment or resources; encouragement of multi-disciplinary growth; improvement of the capability to get funds; prestige or visibility achievement; tacit knowledge about techniques; aggregation of knowledge for managing large and complex problems; productivity; education and training improvement of students and young researchers; increasing science specialisation, or the pleasure of working with colleagues.

The collaboration that happens within a group is associated with the concept of critical mass – that research is dependent on critical mass to thrive. This concept is partly a normative and policy related concept, but does show a widespread conception of large research environments being good for research (Vabø & Kårstein, 2014, p. 13). A critical mass is necessary because it would reach sufficient productivity and quality in the research, research training and education. It is seen as a component that is well-suited to lead to a stimulating research environment, sufficient academic level and ambitions, create synergy through interdisciplinary work, develop networks, and attract staff, and to reach a good financial and administrative framework.

Vabø and Kårstein (2014, p. 13) further argue that research groups specifically are needed due to the rise in expense to conduct research, and the complexity that is needed today, as it gives a certain size required for good quality. What this size seems to be depends on the nature of the knowledge concerned.
4.1.3 New Forms of Entities Appearing

At the University of Tromsø, the rector Anne Husebekk has recently speculated whether the faculty structure is suitable as an appropriate structure anymore (Vidnes, 2016). The University of Tromsø has recently gone through a merger process where decentralised small university colleges are to be integrated with the university. To be able to operate in an increasingly complex context where the EU, the Research Council of Norway, and society have expectations that need to be fulfilled, Husebekk sees that the faculty as it is known today may be outdated. In the future she envisages more interdisciplinary organisation through schools, centres, and research teams. This speculation from Husebekk is a recent example of the questioning of the traditional organisational structure.

This relates to a broader phenomenon where research schools, study programmes, research centres, and Centres of Excellence, Innovation and Education in research and education are increasingly organised across the departmental structure. Schools for instance are part of this, with the international trend to create schools from faculty units – aiming towards a better integration of research, education and resource allocation (Geschwind et al 2010 in Kyvik et al., 2015, p. 35). According to Gibbons et al. (1994, p. 152) research centres and fringe organisations result from increased pressure from both changes in knowledge production and from the many agencies that have a stake in research, such as the government. These entities are created with the purpose of having a more competitive segment to tackle the changes in funding conditions.

A call for increased specialisation and prioritisation processes has also been made by a professor in philosophy, Cappelen. He has questioned the current way philosophy is organised in Norway (Cappelen, 2015; Mæland, 2016), as he sees it not enabling international competitive environments. Rather harshly he calls the whole academe in Norway a zoo model, where there needs to be one specimen of every speciality to ensure plurality. He calls for an expertise model where resources should be centralised to work in research groups on joint problems.

4.1.4 What is a Research Group?

As the research groups have long been used in the natural sciences as an entity to coordinate work-intensive research in the experimental disciplines, most of the research done on research
groups starts off with the premise that it is an entity for experimental sciences. The literature on research groups has often dealt with whether or not research groups are good for efficiency and quality of research. The factors that have been looked at to assess this are the groups’ size, the role of the leader, composition of the group, collaboration, and communication within the group. Many of these factors are often intertwined and may not be easily set apart.

At the Faculty of Theology, a research group is today subject to some requirements. Research groups must have a joint research topic, a leader that is an academic in a permanent position there with the responsibility of the research groups activities, at least three members that are hired at the faculty of theology, and may include external members (F. o. T. University of Oslo, 2013). This definition is however an operationalisation that is meant for their research group policy, and may not suit other purposes, as it is too specific in requirements.

In this thesis a research group is understood as a group of scholars that constitute an entity with the purpose of academic collaboration. The aim of this definition is to have an open definition that includes multiple functions, types of membership, composition and form that cover different fields of science.

Figure 2. Visualisation of Research Groups

Academic collaboration is central to the purpose and mandate of research groups. It may be that through academic collaboration one wishes to achieve other goals as strategic gains, or work with more interdisciplinarity. These goals may however differ from context to context – nationally, historically and per discipline. So what remains is the intent of academic collaboration that is a commonality in groups. It may not always be achieved but the manifestation shows that at some point it was intended to collaborate.
The definition does not make claims as to who takes part in a research group other than a group of scholars. That is because research groups may have members that are senior researchers with permanent positions, postdocs, PhD candidates, student assistants, emeritus professors, and an associated engineer and possibly others. All these types of member may have different anchoring with the core institution or organisation, often called internal or external members. The group composition – what types of member are included or not, and how the balance is between experienced and less experienced members and internal and external members – does vary. Often it is the discipline or the local policy in an environment such as a department that would determine how the group is composed.

The groups may be interdisciplinary, transdisciplinary and disciplinary. How the research groups relate to a given discipline may find many forms.

The one function that may be a commonality is that of research collaboration, but depending on how loosely structured a group is, the degree to which, and how, research collaboration takes place, may differ and therefore the term academic collaboration is used instead. By academic collaboration more functions may be included not only directly relevant for research, but also to do with dissemination, recruitment, research training, and digital collaboration.

It should not be forgotten that there are many names by which research groups are understood, such as research teams. The confusion is further complicated with research groups being confused with such other entities as research networks, research centres or other similar units. For these reasons one should be aware that there may be many names associated with research groups, and that the distinction on which is what may be hard to make. One respondent from the humanities takes part in networks that could work on projects in a way that is hard to distinguish from the work research groups do. The respondents participate in an anthology project, where they meet regularly and discuss and present their chapters, which may share similarities to a very loosely structured research group.

For many of the respondents to make a clear-cut distinction between research group and research project was hard. The only distinction could be that the research projects ended at a given point, but the research groups did not necessarily end. Whether large research projects were included in the work of a research group, or an ad-hoc group was formed to work on a
research project they did seem to work in much the same way and the same dynamics could appear, especially regarding the longer-lasting research projects.

Another issue that was met was that of the formal entity of a section at the natural science faculty. It refers to a formal subsection of a department there that normally would join several thematic small research environments. For most of the respondents in this thesis the section was the formal administrative unit with which they might share offices and interests with, to a department; for them a research group was a separate entity.

4.1.5 Research Groups Nationally

Kyvik et al. (2015, p. 17) asked academics in Norway if they conduct their research in a formal research group. Table 3 shows that in all fields some do conduct their research in a formal research group.

Table 3. Research Groups and Conduct of Research (Kyvik et al., 2015, p. 17)

![Table 3: Research Groups and Conduct of Research](image)

In this table permanent academic staff at the old Universities were asked to what extent they conduct their research in a formal research group at their own institution.

Categories in English, descending order: Medicine and health, technology, natural sciences, social sciences, humanities.

Scale in English, from left to right: Fully agree, somewhat agree, neither or, somewhat disagree, fully disagree.

In 4/5 fields of study over 60 per cent answered that they perform their research within research groups either to a large extent or to some extent. There are considerable differences between the different fields of study where the humanities state that they do a lesser extent than the rest, and medicine and health do to a much greater extent than the rest – with over 51
per cent answering to a large extent. The others show more compatible results. It should be noted that there are considerable parts in all the categories that only to a little or no degree conduct research in a research group.

This shows that research groups are prevalent in medicine and health, and have a strong considerable position in all the fields of study. Given that both the social science and the humanities have traditionally not organised themselves through research groups this graph shows that this is not the case anymore. Research groups continue to have a strong position where they have been a normal feature, and are gaining a strong position where it was not the same before.

**4.1.6 Research Groups at The University of Oslo**

In absolute numbers there are around 400 research groups at the University of Oslo, of which three-quarters are located at the faculties of medicine and natural science. With 215 groups affiliated with medicine, 99 groups are affiliated with natural science. The rest of the groups are located at the other faculties: in humanities, educational sciences, law, social sciences, dentistry and theology. The Faculty of Social Sciences stands out from the rest as only a half of their departments – three out of six – had research groups. Departments such as political science, social economics and sociology are not organised this way. This seems to be a deliberate choice.

In the next table the distribution of research groups at the faculties is shown based on the faculty units’ web pages on research groups in 2014. There were substantial differences in what the faculties reported as research groups and what probably are research groups; therefore a distinction is made between the two categories.

Other units in table 4 refers to research groups outside of the faculty units such as the Natural Museum, Centre for Gender Research, and institutional interdisciplinary research groups in prioritised research areas. Some research teams and research groups may be found incorporated in such other structures as research centres and change environments as well. The practice on how these are labelled at the faculties, departments and from research centre to research centre varies, as some would be part of the table 4 and some would be merely be considered as internal teams. As a result, some of the included research groups in table 4 may be more loosely organised than the mentioned internal teams in research centres. But different
labelling practices of research groups are only one trend in a larger picture where the faculties communicate differently about research groups.

Table 4. Number of Research Groups at the University of Oslo

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Probable Research Groups</th>
<th>Reported as research groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theology</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Law</td>
<td>10</td>
<td>54</td>
</tr>
<tr>
<td>Medicine</td>
<td>215</td>
<td>218</td>
</tr>
<tr>
<td>Humanities</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Mathematics and Natural Sciences</td>
<td>99</td>
<td>117</td>
</tr>
<tr>
<td>Dentistry</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Educational Sciences</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Other units</td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td>SUM</td>
<td>411</td>
<td>455</td>
</tr>
</tbody>
</table>

The category of probable research groups show what are probably active research groups which excludes other types of units, non-active groups and other sites that do not adhere to the general conception of research groups. The category of reported research groups shows the actual number of research groups from the websites.

4.1.1 Development of Groups at the University of Oslo

Most research groups and policies were founded or formalised in the decade starting in 2000. Increasingly research groups were mentioned in strategy and case documents at departments and the faculty level. Around 2005-2006 this peaked, and since then there has been a steady increase in the number of research groups at the University of Oslo (F. o. E. S. University of Oslo, 2013, p. 1; F. o. L. University of Oslo, 2010, p. 1). This included forming research groups in disciplines in the social sciences, humanities, educational sciences, theology and law. In experimental sciences this was paralleled by a formalisation process of more informal, existing research groups that started to appear online and in documents.
Alongside the establishing of individual research groups some faculties also implemented a framework to shape the conditions for the research groups. This was done at law, theology and educational sciences (F. o. E. S. University of Oslo, 2013, p. 2; F. o. L. University of Oslo, 2010, p. 1; F. o. T. University of Oslo, 2013).

Many of the early research groups seemed to be initiated by researchers, with the support of either faculty or department. This was seen at the social science faculty in 2005 (F. o. S. S. University of Oslo, 2005, p. 2). While at some places where faculty units developed research policies it was emphasised that the researchers should find researchers to work together with themselves, as it was at the faculties of law and educational sciences around 2005-2007 (F. o. E. S. University of Oslo, 2013, p. 1; F. o. L. University of Oslo, 2010, p. 1).

4.2 Network Based Steering

Research groups and efficient academic collaboration may be a policy wanted by state actors in order to ensure top-level research that is able to compete in an international arena. Although not as tangible as other policies, influence and steering could be said to be present in this matter as well.

The state is interested in improving Norway’s position in international knowledge production measured by success in the European Research Council. Therefore, the message the Norwegian state sends to researchers and institutions is that they need to secure more funding from the European level. In network governance steering is marked by not only occurring from the state to a sector, but increasingly steering occurs at other levels too – such as the European level (Ferlie et al., 2008, p. 337).

For the state it is the outcome – as top-level research – in this area that is the important issue, rather than the process, which is another feature of network governance (Ferlie et al., 2008, pp. 330-331). As the institutions and their subunits need to act strategically, their research capacity needs to be efficient and deliver results. How to organise the internal structure is not only an institutional matter but even more a matter for the faculty units, the departments and the researchers. It is the units closest to research that are accountable for specific research. The delegation of power to the lowest possible level is yet another characteristic of network governance (2008, pp. 330-331).
How good practice and ideas spread through networks is an example of isomorphism as well as network governance. Mimetic isomorphism and normative isomorphism occurs as good practice examples spread through actors copying leading actors, and normative spread through the academics sharing certain beliefs of what is needed by an efficient research structure now. It is seen that as influence does not occur in vertical forms on this matter, horizontal influence is more important, such as through networks. It happens through networks at all levels, institutional and subject level, as programme committees in the Research Council of Norway and external evaluations committees, as they promote certain ideas.

Network governance could be used to understand how organisational change is promoted in horizontal ways, and yet still be seen as a form of steering deriving from state actors. Although there is no direct steering on this matter, the state does play the role of a facilitator by pushing the agenda, encouraging networks, spreading best practices, and by the instruments the research council uses as centres of excellence and other soft instruments. As network governance is about how influence comes from many actors at the same time, is intertwined, and that state actors facilitate network based approaches for the other stakeholders it seems to apply in this context (Ferlie et al., 2008, pp. 337-338). On a topic such as organisational change within the university it is vital to ensure compliance and to see self-interest by university actors in the given pressures.

4.3 A Strategic Unit

Externally derived instruments, as Ferlie et al. (2008, p. 326) mentioned in their steering definition, could mean the use of resources to steer in a given direction. For organisations resources are inevitably linked to their success and survival and that they to varying degrees need to adhere to their suppliers (Pfeffer & Salancik, 1978, p. 2). Therefore, it will be looked at how research groups can be interpreted as a necessary outcome given the constraints of the environments. As some group leaders experienced, to work in a research group was important for participating in international networks and made it easier to get funding (F. o. L. University of Oslo, 2010, p. 4). Research groups can be seen as a strategic unit to gain access and resources.
4.3.1 External and Internal Funding Sources

A simple distinction of different resources is to distinguish between those resources deriving from external sources and those coming from internal sources. The external funding sources in question are mainly through the Research Council of Norway, the EU, or through external partnerships with other actors.

For most of the respondents it was the national level – through the research council – that was the most relevant funding source to apply to. Some of the respondents’ research group was already a part of a Centre of Excellence scheme and others aspired to attain such status. Other than that, different forms of project funding from the Research Council of Norway were particularly important.

To secure resources from the EU level was not common among most of the respondents today, although at least one had attempted to do so before. There were several reasons as to why the European Research Council was not the primary income source. First, it is not the primary funding source for most researchers; the national level is. Second, they were reliant on what the European Research Council included in their calls for proposals. Some of the respondents were simply not working on the topics relevant to the European Research Council. Third, a sufficient research structure was needed to work on such large projects. The respondents in this thesis did not have the capacity for that, or had not had that capacity earlier.

Several of the respondents were working with external organisations, some of which they had developed a working partnership over years to mutual benefit, others for a shorter period of time. The external organisation would gain expertise, updated knowledge on the research and/or finished tools. In return the research groups would get easy access to test subjects or financial support. Working in partnerships like this made sure that the research was seen to be of use to all actors.

By internal resources is meant resources from inside the university. They may come from several levels but it is largely the faculty unit and the department that may be of particular relevance in this regard.
Converging Criteria and Mechanisms

It is seen that as the reliance on external funding has increased and resources have become more important, the mechanisms as to how resources are obtained or distributed tend to become more alike in both external and internal distribution. As governance may happen through networks, and there is a need to perform well for all actors, the same ideas may be present in both external and internal decision-making, and at the different levels.

The mechanism in question is, for instance, an increased use of strategic priorities through policies and funding, and an emphasis on research collaboration, often in large units and/or interdisciplinary work. The decision-making units may not encourage all these factors, but do often tend to converge on some of them. As the same criteria are present both externally and internally, the distinction regarding the two has become less important, especially for the research environments that need to secure funding. They would have to show that they meet the same criteria both externally and internally.

The increased use of strategic priorities is present both externally and internally. As the research council nationally and the EU have large research programmes on topics that are seen to be important for society to tackle, the grand challenges for instance, a substantial part of resources are steered toward ready-defined topics. This is also seen at the institutions; both universities and faculty units are today expected to define priority areas for their research. In practice, when topics have been defined as a strategic priority, more and more policies are made or changed in order to best suit the priorities. The priority process inevitably means that some topics are prioritised over others.

Different forms of research collaboration are also encouraged. Externally it is seen that the Research Council of Norway has prioritised applicants that can show a large research environment that can support the projects. This project allocation could be seen as an investment that the supplier needs to ensure is put to continued use, and the long-term effects are better for one applicant than another. Formal units of some kind are one way to show this. In the natural sciences it is expected to demonstrate supportive environments, but that also seem to be expected from other fields as well. Two of the respondents said that the research council was one of the actors that signalled to the humanities that they need to organise themselves more in formal units supporting academic collaboration.
It may also be in the form of such very large units as research centres and other policies that some allocators may encourage. Simultaneously, interdisciplinary work is also expected more than before, and is included in criteria.

These last points also occur in internal policies. As shown earlier, most of the faculty units at the University of Oslo today support research groups financially. This seems to be because they are seen to be strategic in fulfilling such other goals as ambitions, funding or publishing. To encourage large units appears in the natural sciences faculty’s change environment policy, and in the many research centres appearing all across universities. Interdisciplinary work may also be included as a criterion internally.

Another issue is that when research environments are successful in securing external funding, in many places it seems that internal units support this with more funding. A successful application to either of the research councils may also attract further funds from such different internal actors as the institution, the faculty unit or the department.

In sum, this means that more and more internal funds are tied up with external funding, and with strategic work to build environments to be able to compete for external funding.

If a department’s finances are good they may also have some part in funding research environments, although it does not seem to be as permanent, nor the same amounts, as with the faculty units. One department mentioned by two respondents had in 2015 some funds that were made available for research groups to apply for. The sum in question was 200 000 NOK, a substantial sum which would be given to two or three applicants. This was done in order to encourage research groups: encourage the existing research groups, revive old research groups, and encourage formation of new research groups.

All of this seems to adhere to what Ferlie et al. (2008, p. 338) noticed with network governance; that funding would be allocated to groups rather than individual researchers.

**The Role of Faculty Units**

As already indicated, faculty policies regarding research organisation are vital for the research groups. All the faculties may not have a policy regarding research groups specifically, as some do, but they nonetheless have other policies that may influence the research environments. For securing funding internally the faculty units do however seem to be the
most relevant source. Departments may play a role too, but this could seem to be on a smaller scale, and may be less systematic when it comes to research groups in particular. As the faculty units are pressured regarding output they are working as strategic actors themselves, demanding or encouraging their researchers regarding certain actions and directions to go in.

Through the document analysis it is seen that three faculties at the University of Oslo have established a faculty-level system for research groups: the Faculty of Educational Sciences, the Faculty of Law and the Faculty of Theology. They see research groups as an instrument to organise their research activities better to achieve high publication rates and to position themselves as excellent research actors within their fields (F. o. E. S. University of Oslo, 2013, p. 11; F. o. T. University of Oslo, 2013). It is customary that the research groups are given a small maintenance fund each year according to the criteria the faculty unit has set, as is done at the faculty of educational sciences, although this does not occur everywhere.

The two faculties that are particularly looked into in this thesis have certain policies that are of high relevance for how to organise research.

At the Faculty of Mathematics and Natural Sciences it is particularly the policy scheme they have regarding top-level research and the defined priority research areas that are of relevance. Today the policy scheme is called Change environments, but they have previously had several other programmes to build up research environments strategically (T. F. o. M. a. N. S. University of Oslo, 2013). The change environment today promotes very large research groupings that are meant to be able to compete for funding from the research councils at national and European level. They are often of interdisciplinary nature, but may be interdisciplinary between different specialties within a discipline.

According to a respondent, a research grouping consists of several research groups and individual researchers. The groupings allow them to make use of the competence of the individual researcher that may only have a student or a PhD candidate affiliated to them. In some cases, the research groupings amount to over a hundred people taking part.

As both the change environment programme and the priority research areas for the faculty units have been established, more and more resources are allocated through them and to them. Primarily that means PhD candidates, yet some resources are still allocated through departments to fill educational needs in the study programmes.
At the Faculty of Humanities they do not have a similar scheme to change environments, but they do have set priority areas and mechanisms through various committees that are of relevance to research groups. For instance, in the humanities, the ways PhD positions are allocated have changed over the last decade. They went from emphasising the qualifications of the individual applicants, where the qualified applicants were assigned to a department, to allocating PhD positions to established research environments where researchers had to be working formally – and in reality – together. To show that there was a well-knit and active research environment thus became important to secure PhD positions: research groups are one way of showing that.

When the faculty of humanities defined priority research areas they invited different networks and research groups to get behind a thematic priority area. When priority areas are set at a faculty unit, they do later tend to become part of criteria and guidelines on how to allocate different types of resources internally when they are revised.

4.3.2 Type of Resources

The types of resources that are of concern to researchers are often, but not only, financial: they may also be more material matter. Getting more and the right resources is important to researchers because it is what enables them to build up their research environment. The strengthened position that is gained is what matters when competing for more resources, and makes it easier to continue to obtain resources. As such it is important to get into the game by obtaining resources for some, while for others it is important to maintain the position that they have built up.

Job Positions and Large Research projects

With the increased importance of external funding, to obtain large research projects is essential. It is often what enables other resources needed as applications may include funding a PhD scholarship. This is normally obtained from the Research Council of Norway, but may also be obtained from the institutions, private firms, and the European Research Council.

To build an environment one needs to bring more people in to work on the same topic. This may be an interrelated issue to that of large research projects, as job positions may be allocated as part of a project. The job positions are mainly PhD and postdoc positions. Job
positions may also be funded through the faculty units’ budgets. Then it is the faculty units that determine the criteria for how they should be distributed.

To get a PhD scholarship in particular tends to be one of the most important reasons why researchers take part in an increased structuration of their work. It has grown in importance in the humanities by having to show an active research environment in which they are to be included. In the natural sciences a respondent said that it was the primary reason for them to take part in a research grouping.

**Other resources**

In addition to these two types of resources some other tangible resources were mentioned by the respondents as a reason for taking part in research groups. One is that of access to expertise. A respondent in the natural sciences mentioned this, as others within the same field knew more about other techniques that could be used in their own experiments. Access to more expertise may often be the result of more structuration internally at the faculty – as through networks, research groups and research groupings internally – but may also come from third parties. This access to expertise meant that their own research group could spend less time on obtaining the same skills or knowledge.

The same respondent mentioned access to laboratory equipment. For them by working in a research group meant that they had better access to the Research Council of Norway’s advanced laboratories placed elsewhere.

Several of the respondents worked with third parties such as other public institutions or commercial firms. Some of these working relationships had developed into long term partnerships with key institutions. Working with the third parties could mean access to test subjects for their research, and were highly valued.

Another resource is that of a physical venue. Most of the research group was already located – or partly so – together. For the research group that had a more interdisciplinary approach this was not initially the case. One respondent reported that their interdisciplinary group after some time was allocated a venue where they could work together. The respondent saw that having a venue to work together may have been one of the factors contributing to an active group. Being located in the same venue means that there is more informal contact and it is much easier to approach one another on both work-related and social issues.
A last resource that was mentioned was that of access to good research administrative support. Especially when considering competing in Horizon2020 this would be essential. One respondent in the humanities saw that working in a research group meant that they could have easier access to administrative support from either the institutional level or the faculty unit. However, for most respondents, the lack of access to such support was a concern when they considered such an acquisition process.

4.3.3 Research Group as a Strategy

Using resource dependency perspective we see the reliance on resources for research environments, thus research groups can be seen as a response to environmental constraints (Pfeffer & Salancik, 1978). As actions are not random in this perspective, the constraints the researchers face are part of the reason to understand the continued use of research groups, and why they have been formed elsewhere. How researchers perceive the demands of their environment is important to understand this phenomenon.

Several respondents have noticed an increased expectation to show formal collaboration in allocation processes. The research council and the internal allocation processes are both mentioned as requiring this – or where it is not required it is a competitive advantage.

Research groups projected an image of a being something more than just the sum of their parts, and were perceived as more than the sum of individual researchers joining forces for ad-hoc research projects. A research group is seen as more stable than an arrangement of a few individual professors and their junior researchers pooling resources for a single project: such an arrangement is prone to be reliant on a couple of key individuals, and thus is more vulnerable.

Working in a formal research group implied that members were in it for the long haul. The projection of continuity made it easier for external stakeholders to invest by allocating project funding as it indicated a continuous effort to build expertise also for younger researchers. As especially projects from the research council could last for years, with substantial sums involved, this was important.

Another issue was that the applicant who succeeded in obtaining a large research project needed to show the adequate structure to support a large project to the end. Research groups
were seen as a useful entity to make sure that large research projects are equipped to follow through those large projects.

Internal allocation processes could have such issues as what is good for publication rates, how to build environments that can compete nationally and internationally, and how PhD candidates are best integrated in the research environments. The ways in which internal funds are allocated are many, as they happen through committees at different levels and policy schemes, which mean that there are nuances to what the different organs prefer; yet there seems to be a tendency to reward or allocate to where research collaboration is consolidated. This happens through both written criteria and informal preferences.

One group also experienced that it was easy to disseminate research results and build alliances through a research group with their external partner institution. There were close ties with the research group and the partner where interdependencies seemed to have been created. The partner provided the research groups with test subjects/cases to conduct research with, while the research group gave expertise back in form of information sharing and candidates who got jobs at the partner institution. Working in a research group meant that it was easier to communicate findings through a website, and make long-term alliances with staff that may have worked in both of the two partnering institutions.

Three respondents in the humanities confirmed this with what was important when they formed research groups. They had been getting signals to collaborate more in the humanities from the sector and the faculty level for some time. One respondent saw research groups as an appropriate template to use to fulfil that expectation, as it was an already established template for academic collaboration in medicine.

### 4.3.4 Sufficient with Small Resources

Several respondents in the humanities claimed that large sums were not always needed to support research groups. One respondent for instance was working in an international research group where other senior researchers took part. The only funding needed was the researcher’s own research funds, in order to be able to meet the rest of the group in a European city. Another saw it as only needing small funds to bring students with them to conferences and arrange writing seminars.
Although when larger sums were available they were put to good use, sometimes only small sums were needed to cover modest activities. If there was a possibility of applying for modest funding through their department and sometimes faculty unit for issues like this or other initiatives, they saw that as sufficient at times. Such modest support could encourage collaboration efforts and initiatives.

### 4.4 A Legitimate Unit

The other part in the steering definition by Ferlie et al. (2008, p. 326) is that of institutional arrangements. To survive, an institution would have to establish legitimacy in both the environment and internally. A widespread notion that what they are doing is seen as the right action would have to be in place. This position is shared with neo-institutional theory and resource dependency.

As the research groups may be analysed from many different angles, they can be seen both as small pieces in larger machinery – the university, faculty or department – but may themselves be considered as an institution on their own. Thus they need to be considered as a legitimate unit whose existence and functioning is central to this understanding (Deephouse & Suchman, 2008, p. 2).

#### 4.4.1 Research Quality

The way in which research groups affect research quality is one way of establishing legitimacy. It is such a fundamental issue that it relates to the very core of research groups’ existence. There are naturally many mechanisms through which this happens in practice.

A common practice among highly-consolidated research groups is to arrange events which often include presentation of the members’ research; the feedback they would get from that is one way that could contribute to research groups being good for quality of their research. One respondent from the humanities said that by working in research groups had meant a lot. It meant thinking differently about questions, and to discover that your definition of a concept was not the only one. Since different disciplines viewed the same issue with different eyes the respondent saw that this had been definitely been useful for the research.
Another respondent from the humanities said that the research group’s primary function was to consolidate them as a group, and to work together on developing projects. Second, the respondent saw that by practising co-writing, the quality of their writing improved. There was always someone who could pull more than the others at times, than if they had sat alone writing and had to come up with everything themselves. The respondent saw that the quality of his/her own work got better by working this way.

One respondent from the natural sciences saw three large benefits with research groups: taking part in interdisciplinary work, access to and development of technique, and access to expertise. Issues like these should not be neglected, considering how research groups lead to enhanced quality.

In the report published by Kyvik et al. (2015, p. 26) one of the tables show academics’ views on this issue. The question was asked to assess whether or not the research group they participated in was important for the quality of their own research.

Table 5. Quality of Research (Kyvik et al., 2015, p. 26)

<table>
<thead>
<tr>
<th>Category</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medisn og helse</td>
<td>52</td>
<td>26</td>
<td>13</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Teknologi</td>
<td>44</td>
<td>30</td>
<td>14</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Naturvitenskap</td>
<td>41</td>
<td>34</td>
<td>14</td>
<td>3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Samfunnsvitenskap</td>
<td>28</td>
<td>37</td>
<td>17</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Humaniora</td>
<td>25</td>
<td>37</td>
<td>17</td>
<td>9</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Percentage of group members at comprehensive universities that state whether or not the research group is important for the quality of their research.
Categories in English in descending order: Medicine and health, technology, natural sciences, social sciences, humanities
Scale in English from left to right: Fully agree, somewhat agree, neither or, somewhat disagree, fully disagree.

Over 60 per cent see the research groups as good for the quality of their research in all fields of study. The proportion is lower in social science and the humanities than in medicine and health, technology and natural sciences, but still surprisingly high in the fields of study with
less tradition and experience of working in research groups. This shows that among members of research groups a large majority do think the research group is important for the quality of their own research.

4.4.2 Collaboration Within the Research Group

As collaboration is gaining more ground in academe one should look at how collaboration is perceived by those involved in it. Academic collaboration can be treated as two separate issues. First is the issue of academic environment, and the second is that of a social working environment, that some respondents experienced as a benefit. They would relate to one another given that when a good social working environment is established it is easier to work on academic matters together. For at least two of the respondents from the humanities forming or joining a research group had resulted in the gain of both an academic and a social working environment.

Respondents were able to notice a difference from their work environment before research groups, as it was more solitary. Having a framework to support academic collaboration made it easier to participate, hence research groups did contribute as a framework to support academic collaboration. In one or two groups they practised co-writing, and had an annual writing seminar. One respondent said that he/she would not write anything unless there were at least two people writing it together. In the co-writing practice they would often include the associated students of their group.

To work in a research group was seen as a form of adult learning by another respondent from the humanities – where one learned how to interact with other researchers again and again. One would get new impulses and learn new things. It was learning new things that were seen as most important to this respondent. As an example it was mentioned that one could meet an author of an 800-page book. While to read the book would not be a priority, if the book was not from their exact field, it is much easier to learn about it from the author her/himself, to have its subject matter spoon-fed. This is the type of knowledge transfer that the respondent sees happening with research groups. Going in and out of research groups, often interdisciplinary ones, was seen as the best form of enabling this.

One respondent said that to work in the experimental field in natural sciences all alone was hard, as it would require learning all the techniques you needed, which would take an awfully
long time. Then someone else would have that expertise elsewhere, in the corridor or abroad. Enabling access to this expertise, and to not work alone in that exact discipline, was seen as one of the advantages with research groups.

One respondent saw that the research group was important in anchoring members to the research environment when they had periods away from the research, for example, when researchers were appointed to other positions in the university system, or had family and sick leave for longer periods. When the respondent had been appointed to a position outside the research group, it was the research group that kept the person updated on the research in the field, and the respondent felt in touch with the research frontier and the research group. This happened through such events as guest lectures and seminars that had low entry cost, such as just meeting up occasionally. The respondent was therefore glad that the well-functioning research group managed to keep the person in touch with the research field. Receiving mails and invitations to events was an easy way of keeping in touch with people who were away from the physical offices for months at a time.

One respondent even claimed that the reason for forming a research group in the first place was due to the lonely experience as a PhD candidate. The respondent saw an essential condition for continuing in academe was to work in a structure that would be more social than could be offered by just supervisor and PhD. The respondent then joined forces with several other colleagues that for some reason also shared the same notion. The research group was seen as one of the few organisational entities that enabled social arenas in the humanities.

In the survey material published by Kyvik et al. (2015, p. 21) academics were asked to assess if the research groups have strengthened the academic collaboration at their department. The respondents answered whether they agree with a statement that the research group has strengthened collaboration between the academic staff at the department. Over 60 per cent either fully agree or somewhat agree with the statement in all the fields of study, except in the natural science where it is slightly lower. Those that disagree constitute less than 20 per cent in all the fields of study.

As this was an intended function of the research groups in some fields of study, such as the humanities, this does show a strong belief in the research groups fulfilling this need or function – hence it could be seen as a legitimate unit regarding research groups contributing to more collaboration between colleagues.
Table 6. Academic Collaboration (Kyvik et al., 2015, p. 21)

<table>
<thead>
<tr>
<th>Category</th>
<th>Fully Agree</th>
<th>Somewhat Agree</th>
<th>Neither or</th>
<th>Somewhat Disagree</th>
<th>Fully Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medisin og helse</td>
<td>34</td>
<td>31</td>
<td>20</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Teknologi</td>
<td>26</td>
<td>38</td>
<td>19</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Naturvitenskap</td>
<td>23</td>
<td>34</td>
<td>25</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Samfunnsvitenskap</td>
<td>27</td>
<td>37</td>
<td>18</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Humaniora</td>
<td>28</td>
<td>34</td>
<td>20</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

This table shows percentage of group members that agree or disagree with the statement: The Research group has strengthened the cooperation among the academic staff at my department/ section. Again this is among academic staff at comprehensive Universities, and is showed according to fields of study.

Categories in English, descending order: Medicine and health, technology, natural sciences, social sciences, humanities.
Scale in English, from left to right: Fully agree, somewhat agree, neither or, somewhat disagree, fully disagree.

4.4.3 Networks and Specialised Fields

According to Gibbons et al. (1994, p. 6), research is subject to finer and finer specialisation. It is the differentiation process that occurs both at universities and in the knowledge society that drives the increased specialisation. This means that subfields are recombined and reconfigured to make new forms of useful research. This, they argue, is part of what makes the knowledge production move from the traditional disciplines into new societal contexts.

As their research fields were so specialised for most of the respondents, who did not have any others working on the same issue at the institution – nor nationally for a few of them – they could best discuss their research with international counterparts. The networks they established meant everything and could open up more funding options. Working closely with international networks was the only way in which they could discuss their work in an academic context.

Thus the networks they established internationally were seen as crucial for their research. To work in research groups enabled them to stay in touch with their networks and to establish contacts more than was possible in ad-hoc arrangements. One of the respondents mentioned
that working in a research groups made that process easier, as it made it easier for their collaborators to show collaboration with an established research environment. This is in line with what Andrade, de Los Reyes Lopez, and Martín (2009, p. 304) looked at: that research groups that collaborate with other research groups have access to a wider knowledge sources as part of a knowledge network.

However, it is not only international networks that are of relevance, as national networks are also important – especially regarding funding opportunities, access to other expertise and equipment or data availability. This involves a wider understanding of networks, not only purely academic. A respondent in the natural sciences mentioned that maintaining networks in Norway with others working in her field, with key persons within the research council, and with third party collaborators in their applied field, was essential. It allowed for feedback on their work, kept them in the loop on what calls for proposals were planned, and kept them in touch with their applied field.

4.4.4 An Arena for Research Training

Traditionally one of the factors that has influenced the way PhD candidates are trained has been that of which discipline and fields of science they belong to, and the common working template there. Thune et al. explain the difference this way:

“In experimental disciplines in which lab-work is important, PhD candidates and their supervisor are likely to be part of research groups, and the supervisor typically has a much more hands-on approach to supervision than in the humanities and social sciences. Candidates in experimental subjects generally receive more support, not only from their supervisor but from colleagues and more senior PhD candidates and post-docs, and generally report higher satisfaction with all elements in researcher training, including supervision” Thune et al. (2012, p 60).

The role of a research group in the socialisation of PhD candidates has been looked at by Meschitti and Carassa (2014, p. 166). They see the research group as a unit in the natural sciences that is well suited for socialisation into the discipline and the role as a PhD student. In that regard, particular team meetings and invited lectures were examples of important activities within the group. The team they looked at showed a strong mutual engagement
among members, and had a leader who facilitated a dialogue seen as useful for the socialisation process.

Delamont, Parry, and Atkinson (1997, p. 547) also examined the nature of enculturation of PhD candidates in the natural sciences. They argue that academic capital is transmitted from generation to generation through research groups and laboratory work. Through this process the candidates are enculturated into the habitus of their discipline. The pedagogical continuance into the epistemic culture and epistemology is successful because of the role of the postdocs in the research groups and the close intergenerational gap between members of the groups. The postdoc’s role in taking over the responsibilities of day-to-day decisions and supervising is what distinguishes this process from disciplines in the humanities.

Delamont et al. see that in the humanities the process of socialisation into discipline cannot rely upon close intergenerational gap and a similar role for the postdoc. It has had a more individualistic and radical way of scholarship they argue – where the pedagogical continuity is more to do with the relationship with a PhD candidate and the supervisor (Delamont et al., 1997, p. 548). The authors hold that research training in the humanities may prove more discontinuous than in the natural sciences.

Despite the different practices, supervision and integration of PhD candidates in active research communities are increasingly recognised by the universities in presumably all fields of study (Thune et al., 2012, p. 47). As more attention has been given to PhD programmes and what factors are essential in making them work, over the years the quality of the programme is under scrutiny by many actors. This is something that institutions and units are making deliberate strategies to tackle. The increased attention on this is that where the PhD training usually was assigned to a single professor means that there are more pressures to integrate their candidates into active research communities.

The adoptions that are put in place vary, especially due to the different research practices based on epistemology, but they include research schools, making social programmes for PhD networks at the institution, integrating the students through participating in large research projects or research groups (Thune et al., 2012, p. 92).

The idea behind this is that the integration in active research environments – or positive learning environments as they can be seen to be – will ensure quality in the PhD training. In
the report it is seen that candidates that have the support of a larger research environment score better on all counts (Thune et al., 2012, p. 92). One of the recommendations that Thune et al. put forward is to distribute new PHD positions in research groups. This is to allow for concentration of resources based on institutional strategies and prioritised research areas.

In law it was the research training function of the research groups that received the most positive feedback of the research groups throughout their evaluation. The candidates were offered an academic environment where they met other researchers at various levels. Being integrated through research groups meant a faster integration of the PhD students, and the candidates in the groups were often more productive than before. However, it was also mentioned that not all PhD candidates had the same experience. If their project was too far away from the research group’s topics, the students might become marginalised within a research group. But generally one can say that the PhD candidates were amongst those that benefit the most from the introduction of research groups (F. o. L. University of Oslo, 2010, p. 4).

Thune et al. (2012, p. 66) further show that the ratio between the number of academics and number of PhD candidates is not a stable size, and might be an indicator for changes within the PhD training and the conditions for it. While the number of professors and associated professors has been about the same for a decade – 1999-2010 – the number of PhD scholarship holders and PhD candidates in general has about doubled in same period. Note that PhD candidates also include non-funded PhD candidates from the four universities, but may include PhD candidates from the research institutes, hospitals and other institutions.

These data may indicate that there has been a move away from a model where there has been a doctoral candidate for every professor, towards more doctoral candidates for every one professor. This, in turn may create pressure towards the organisational structure, as individual professors may not be able to accommodate the mentor and supervision duties that PhD candidates need. There has also been a steep increase in the number of PhD candidates that have their primary affiliation outside of the university; they may require fewer resources, but still some work is needed for a minimum of integration with the doctoral programme.
In the report from Kyvik et al. (2015, p. 27) it is asked whether or not research groups are seen as important in research training. Over 60 per cent of the answers in all categories see research groups as either fully or somewhat positive for research training purposes. In the table it is also seen that between 19 per cent and 7 per cent do not agree with this at all. Nonetheless this shows a clear positive attitude towards research groups as a good training facility for becoming a researcher.

The respondents acknowledged many of the topics presented so far on research training. Their experiences were manifold and may not converge on all points, but what was a feature in all the interviews was an emphasis on the research groups in relation to PhD candidates. They were an integral part of the discussion of research groups.

As expected there were substantial differences between the natural sciences – the experimental ones in particular – and the humanities in how this integration took place within research groups. In the experimental sciences the research groups are characterised by a strong hierarchy with set tasks for each participant. They had a clear leadership structure; a pyramid of postdocs, PhD candidates and Master’s students taking part. The postdocs took
Table 8. Research Groups and Research Training (Kyvik et al., 2015, p. 27)

<table>
<thead>
<tr>
<th>Category</th>
<th>Fully Agree</th>
<th>Somewhat Agree</th>
<th>Neither</th>
<th>Somewhat Disagree</th>
<th>Fully Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medisin og helse</td>
<td>53</td>
<td>23</td>
<td>12</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Teknologi</td>
<td>53</td>
<td>22</td>
<td>15</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Naturvitenskap</td>
<td>53</td>
<td>31</td>
<td>9</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Samfunnsvitenskap</td>
<td>28</td>
<td>39</td>
<td>17</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Humaniora</td>
<td>36</td>
<td>29</td>
<td>19</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

Percentage of group members at old universities that state whether or not research groups is important in research training (PhD).

Categories in English, descending order: Medicine and health, technology, natural sciences, social sciences, humanities.

Scale in English, from left to right: Fully agree, somewhat agree, neither or, somewhat disagree, fully disagree.

In the humanities two of the respondents saw the research groups as offering more to the candidates than would a one-to-one relationship with a supervisor. Working in a research group made the PhD period less vulnerable, as a respondent pointed out. The candidates would have more people to rely on and to learn from. Another side of this was that the supervising and mentoring required for doctoral candidates would be better distributed, a responsibility shared among several people. Furthermore, working in a research group could give the candidates more experience in working on large research projects, a useful research skill to gain.

Having doctoral candidates in a group was seen as a reciprocal relationship where the research group benefited from the candidates as well. Two ways that happened were identified: first, a research group would benefit from the resources of the candidates. The candidates would bring different skill sets, interests and methods into the group, which could open possibilities or lead in given directions. A respondent said that they had a candidate with
statistical interest and skills, which was useful as few others had this in their group. Working in research groups allowed the candidates to learn skills to be utilised in a way a single supervisor structure would not have enabled. The second way has to do with the motivational and academic interest effect supervising candidates had on senior researchers. One respondent said that it was fun to supervise and to have young and interested members in the group. Especially watching the development of recruited students who later would finish a PhD degree was interesting, and to be a part of it was seen as rewarding. It contributed drive to the group that gave the respondent energy. The opposite situation with no newcomers was seen as detrimental for the academic environment. One group in the natural sciences had been allocated no or few candidates and Master’s students over several years, and found that situation as bad for the academic climate. That respondent claimed to miss the energy that interested students would give for the subject. The group seemed to lack a common project or agenda; to not have PhD candidates did nothing to improve the current situation.

One respondent saw that to be able to function as a leader – and not have members using their academic freedom to work solely on their own projects – one needed to recruit students oneself. Junior researchers being recruited or having a mentor relationship with the leader was the best way to ensure willingness to follow the leader or work on a common project. Finding the balance that works in that field of science and research field, particularly between bottom-heavy and top-heavy groups, was important. Meaning that groups may be too inexperienced if there are many members in the beginning of their careers – bottom-heavy – and difficult to lead if there are too many senior researchers and too few junior researchers. There are of course nuances to this, as to do with personal chemistry, commitment to the agenda, and the nature of knowledge and tasks, but another respondent also saw that a top-heavy group was difficult to lead, and speculated whether things might have been easier with a different group composition.

4.4.5 Recruitment

Recruitment is vital for the continuation of the specialisation or discipline. If academics are not able to recruit now, the academic specialisation they have built up may be in danger at their institution. Recruitment is also needed where the work in itself is labour-intensive.

A respondent in the humanities claimed that the research groups were good for recruitment into their discipline. To invite some students to events, or include them as assistants on large
projects, were some things that the research group did. It meant that the threshold of approaching the research field was lowered, and that both parts could become accustomed to each other. By inviting some students to be assistants it meant that the students would get to know the research field to see whether they liked it. It could trigger an interest in the field and into conducting research. This was essential for ensuring that there were candidates later, for example for PhD positions. By working with the student the researchers could get to know them and be part of shaping their academic interests. In fields working on highly specialised research this was important, as it was difficult to recruit elsewhere with the same competences in the field, or to be sure external applicants had the required competences. Thus, students are an important pool in later potential job applicants.

This respondent did acknowledge that only a limited number of students could take part in these arrangements. The dilemma of only including some students but not all because of resources was also mentioned by some other respondents. While in experimental settings some students were needed, in the humanities one respondent did not include students too much, because of what that could signal to other students. This was probably a respondent working in a field with many students but with few assistant opportunities. Another respondent, from the natural sciences, said that they usually had one student as part of their group. The approaches to this dilemma are varied.

Students were important recruits, but were not the only recruits. Research groups were intended, and some places seemed to work better, to recruit for other job positions as well, especially within established networks.

It was important for the respondents to take part and be able to influence hiring processes. Where they could stay informed and possibly has somebody involved in the process this was seen as a great advantage. Where it was not the case, somebody could be placed within a leader’s group that they knew little about or knew little about them. This is seen in the law evaluation, where the leader of a research group wanted to be more involved in questions concerning the research in terms of recruitment and strategy (F. o. L. University of Oslo, 2010, p. 28).

Recruitment as a research group function is acknowledged at the Faculty of Educational Sciences (F. o. E. S. University of Oslo, 2015). It is seen that a research group should create
an attractive academic environment for recruits - be they Master’s students, PhD candidates, postdocs, or senior researchers.

4.4.6 Research Groups and Educational Aspects

A natural question to pose regarding any organisational entity in the university structure is how it relates to teaching. Research groups are here seen as a functional entity to support research matters; educational responsibility and organisation are in principle structured around such other entities as the departments and committees. Although the research groups are not intended to support educational course in general, there are some aspects that touch upon educational matters.

First, there is the role they have in research training, that has been discussed. Second, a few students are often included in the work of research groups as assistants and other roles as discussed in the recruitment part. These students are expected to not only be recruited into the sub-discipline, but also to learn more about research through their participation.

For both of these groups, research groups are a functional entity in that the responsibility is not put on individual professors to include students, but the framework of a research group spreads the responsibility to more people, which in turn makes it easier. Many research groups seem to have a practice of inviting their students to such activities as lectures – this could be seen a form of lowering the threshold of participation for students. It could mean that the students learn more about scholarship through how research is presented and how critique is part of the process at every level. Including students in research would enable deeper approaches to learning, which emphasises understanding, rather than memorising and application, as it makes personal meaning out of the subject (Brew, 2006, pp. 24-25). For those that are integrated within the research groups, it appears that participating in research groups may fulfil many of the intentions found in Brew’s new model of the relationship between research and teaching: inclusive scholarly knowledge-building communities (2006, pp. 31-33). An example is the focus on social related meaning making of all members and participants at different academic level, although this requires more research. This is reflected in both the relation to teaching and education and the humanities respondents who valued the social aspects the research groups enabled, seen as beneficial in academic terms. One respondent went as far as calling the research groups a form of adult learning, in that they all had to have continual learning to collaborate with other researchers.
As some students and PhD candidates are integral parts of some research groups, they have also been in included in the definition provided earlier of research groups. It is scholars at different levels participating in research groups where scholars are meant to include such groups as students and PhD candidates, and not only senior researchers.

How research groups relate to educational programmes in general is however a different issue. One could say that as the quality of research is improved through research groups, such educational courses as Bachelor’s and Master’s programmes may benefit. However, in practice it is often the Master’s programmes that are most linked to specialised research areas and are in closest contact with the research done at their institution, where writing Master’s thesis within consolidated research groups can be considered a form of integrating research and education. Another issue is that if the research groups are successful in establishing sub-disciplinary specialties one could speculate that it would be easier to establish specialised Master’s programmes or specialisation tracks within the same field. In the evaluation at the law faculty (F. o. L. University of Oslo, 2010, p. 22) one of the groups noted that the research group had been good for developing teaching.

Another issue could be that for those designing the curriculum where students are meant to gain experience with conducting research of their own, working within the scope of a research group may be a useful and practical approach.

4.4.7 A Need for Collaborative Units

In the humanities, the four respondents talked of a period where the faculty tried to encourage forming research groups, probably sometime between 2005 and 2010. That seemed to be initiated by a notion that the researchers sat too much alone in their offices. It was then seen as good for the research to use different organisational entities and forms to encourage more collaboration between the researchers. In this process the research environments were encouraged to report informal working groups to the faculty.

4.5 A flexible unit

Kosmützky and Krücken (2015, p. 146) have showed how university mission statements are alike, show sameness, and yet are different. As a result of isomorphic mechanisms, universities are using the same features in the university mission statements, yet are branding
themselves as uniquely distinct from the other German universities. This has to do with their competition with other universities; they want to be seen as similar to a university grouping, yet distinguish themselves from their competitors.

The same conclusion could be used about research groups, although it may not be competitive forces that account for the distinctions, but rather differences in interpretations of models. However, the competitive dynamic is part of the alignment to the research group template. This is an isomorphic tendency where both coercive and mimetic mechanism is in play – and maybe to a lesser degree normative-based isomorphism (Dimaggio & Powell, 1983, p. 152). Remembering how network governance is a soft but effective steering model, it is seen that the coercive isomorphism is a tendency backed by both the ministry and the research council, as they both implicitly and explicitly use the research group as a model. Mimetic isomorphism is about how organisations look to other organisations for models to use, based on a preconception that the other is a leading organisation and should be looked at. There are two ways this happens; one is that a non-experimental discipline in particular soft-pure and soft-applied fields would look to the experimental sciences for functional models for work and symbol effects when they are expected to collaborate more; the second is that other institutions would look at the university in Oslo for guidance on how to structure their own research when expected to do more academic collaboration. Normative isomorphism – which is about how professions spread ideas, may have a part in this as well, as some fields make the shift to research groups in a more synchronised way, but this has not been examined too deeply in this thesis.

One could say that as research groups are gaining ground by establishing groups or systems and formalising organic groups, they are increasingly seen as strategic and legitimate units, as they are based on a template of the research groups in the experimental sciences; this constitute a sameness approach. The answer to the increased competitive pressure for obtaining funds, human resources and reputation (Fumasoli & Stensaker, 2013, p. 488) and other questions often seems to be research groups, which makes it the same answer across disciplines, fields of science and institutions.

Yet the way this answer, or the template of research groups from the experimental sciences, are put in place and interpreted, varies. It is not the only way that research groups are used. On the contrary there are differences in motivations for establishing and joining a group or a system, internal group composition, how they are used strategically, how they work in
practice, and to how much academic collaboration there is. This shows that there are considerable differences in how the template is being interpreted. Some of these points will be developed throughout this chapter.

So, it is seen that an organisational model is gaining presence, yet is interpreted differently according to specific needs in the research environment. Therefore there is some form of sameness and difference present here as well, although not the exact form as is seen in Kosmützky and Krücken (2015, p. 146).

The difference that is present can be seen as flexibility. The research groups seem to be flexible units, with multiple understandings and interpretations. Although it is clear that the template of research groups comes from the experimental sciences, there are many interpretations of what a research group is about. Through the document analysis this is present in the different faculty units’ practices of the research groups and systems they have put in place. It is also seen that research groups in the humanities value different functions, and that even the research groups in natural sciences are varied. Given this flexibility it makes it possible to create research groups in line with the needs of the research fields and the academics. One can emphasise some elements over others as to what is important right now.

The disciplinary differences play a part in this. As research groups have been more normal in experimental sciences, they are largely accepted as a unit there. This could be seen in the light of logic of appropriateness (March & Olsen, 2011, p. 2) from neo-institutional theory. Research groups are simply seen as the appropriate unit and are not questioned as such. They simply go on the way they have been working – with possible minor and formal changes – in the experimental sciences.

In the humanities however the process has been different. As research groups were not a common feature there until a few decades ago when they started to appear, the process would have to be different. In this thesis it is seen that part of the development was a significant pressure towards more academic collaboration in the humanities. That meant that many of those working in research groups today have gone from working in relative isolation towards more collaboration. The changes in academic work and the working day have been huge. This has meant that research groups have had to be formed by key individuals that believe in them for their own purposes. Still, by some it is seen a controversial direction, as the debate on the evaluation of the humanities by the research council showed initially in this thesis. In
addition to this, research groups in the humanities would have to be different from the strong hierarchic model found in the experimental sciences. This means that those forming and participating in research groups in the humanities have to think thoroughly through what research groups should do, how they could work for them, and continue to do so. Therefore, it is seen that there has been a deliberate process in the humanities, where more abstract thinking of what research groups do for different academic purposes has been integrated.

Certain parallels can be drawn to other types of institutions as the department. In Michelsen and Vabø (2014, p. 110) they see the presence of a flexible organisational principles, where the department can be changed according to varied demands of education or research.

Another reason for flexible approaches is that boundaries between the research groups and other issues may be hard to make. Two of the respondents in the natural sciences said that boundaries were often hard to make, as the research groups would often overlap with other structures: that could be large research projects with external collaboration partners.

### 4.5.1 Different Motivations

Through the document analysis and the interview respondents it is seen that when research groups have been formed, many had different motivations for forming them. Nearly all the respondents seem to be aware of the strategic use of research groups with regard both to securing resources and to issues such as networks and research dissemination.

The document analysis shows that the establishment of research groups was important in creating a leading research environment and a good environment for publication. (F. o. E. S. University of Oslo, 2015, pp. 1-2; F. o. S. S. University of Oslo, 2005, p. 2). By leading research environment is meant to gain or maintain a national leadership position by some faculties and departments, presumably be able to compete for centres of excellence status. But for some it was important to create an internationally-leading research environment able to compete for and secure funding from the European Research Council. The change environment policy at the natural sciences faculty is an example of the latter (T. F. o. M. a. N. S. University of Oslo, 2013). In some other faculties the publication profile was considered to be too low, and for them research groups were often seen as a partial solution or instrument to tackle that issue.
In different faculties and department one could find stated purposes for the research group which often was basically the same in several places at the University of Oslo. Research collaboration, systematic research leadership, attractive academic environment for newly-recruited junior and senior researchers, a platform for external funding, and collaboration were some stated reasons for the establishment of research groups (F. o. L. University of Oslo, 2010, p. 1).

However, the interview gave more personal reasons for why each respondent had been involved. One respondent in the humanities did not want to work in academe after the doctoral degree. This was because the experience was so lonely, and the work situation so special, that unless something changed the respondent would not have continued, despite academic interest. Although this did change, as the respondent found some colleagues that also wanted to work more collaboratively on the same topic. From that their research group grew.

One respondent from the humanities describes a process where the respondent met a colleague sometime recent years. They discovered and decided that they could work together on a specific theme. From that initial meeting the collaboration grew, by them inviting other colleagues, some of whom they had met by travelling abroad. Initially it was more thought of as colloquium group that later turned into a research group. The respondent says that it is important to have a good relationship to those you should be working with, that the topic is interesting, and that everyone wants to work in a group.

Today the same respondent also takes part in an international group with five members from four universities that collaborate on a topic. They will be co-writing a book, which is an unusual form of working in the field. The respondent sees academic collaboration as a matter of initiative from the academics themselves; where some take the initiative, others will join in.

A second respondent in the humanities said that one of the reasons for the creation of a research group was to get a former PhD candidate of theirs hired again at the university. A third respondent in the humanities was part of creating an interdisciplinary group in order to get more time to focus on research on a particular subject. A fourth respondent said that they formed research groups because of the pressure for more academic collaboration. Since the end of the 1990s and the beginning of the 2000s it was a lot of individual researchers that were for instance the only author of articles and books. A pressure from above appeared
towards more academic collaboration and co-publishing. Research groups were seen as one frame in which to organise this type of collaboration; later this received attention in application processes too. One needed to show that one was an environment, and a research group is a concretisation of an environment. The pressure towards this came from the national level, from the institution and from the research council. At the beginning, the faculty provided some modest means to support research groups. The criteria set expected that one should be a research environment that did research other than sitting in one’s office writing articles.

Some of these are personal reasons for forming research groups. One of the respondents in the natural sciences gives an account of a group that was created for the purpose of one of the faculty internal policy schemes in promising research areas.

A respondent from the natural sciences said that at their department it seems a bit coincidental that they have organised the research groups in the way they have. As some colleagues retired, there were two remaining groups that had funding for different projects, so more collaboration between them was not seen as natural.

Now they acknowledge that if a new senior researcher is hired, how they would integrate them in the organisational landscapes depends on the resources that the new researcher brings with them. They would like it if they could cooperate with the existing groups, but as they do want the best candidate, if the candidate has a large research group and a large project they will not force them to collaborate. But if the new researcher has no one to collaborate with, they would invite them in to the existing groups.

4.5.2 Size of the Unit

Some hold that there is a limit to size, in that there is an ideal size of which transgression would mean too-high transaction and communication costs that would not make an effective group. If a group gets larger than a given size, communication within the group is seen to suffer. Therefore, some have proposed that there is a maximum limit on members as regards how a group would work organically.

The literature seems to converge on 3-5 researchers plus doctoral candidates and technical staff being suitable in the natural sciences (Johnston, 1994, p. 34). The warning is that groups
larger than that may neither achieve scale advantages nor communicate efficiently. This is supported by Wheelan (2009, p. 259) who looked at groups in general and not research groups specifically; an example of a study that looks at this is Martin and Skea (in Kyvik et al., 2015, p. 11). Survey material from Britain in mathematics, physics and chemistry shows that groups larger than seven or eight were not seen as suitable, and supports groups of between 3-6 members.

Guimera, Uzzi, Spiro, and Amaral (2005, p. 697) put it that successful teams find a size that is large enough to support specialisation and an effective division of labour, but still is small enough to maintain group coordination. However, the larger groups may have benefits in securing external research funds, to organise research projects in, and offer supervision for, PHD and Master’s students (Kyvik et al., 2015, p. 11).

In the document analysis variation was seen in whether the faculties had large or small groups of members. It should be noted that it is hard to compare, as faculties may have different understandings of members, but nonetheless it gives an idea of whether the groups are large or small. It was normal for research groups to have between 2-25 members, while the group with the most members had 56. In law, the groups were in general quite big, with most groups having between 16-35 members. Theology had much smaller groups with 6-10 members, as did odontology, with 2-10 members, and several under five members. The social sciences and medicine tend to have groups with fewer than 15 members. At the remaining faculties of humanities, educational sciences, and mathematics and natural sciences there is no one clear tendency, but the groups normally have between 2-25 members.

One respondent from the natural sciences had experience both in large and small groups. According to this respondent all research groups are dynamic; members come and go by joining or quitting. The group size goes in waves. It is okay when the group is small, but when the group grows again that is better. The phase where groups get smaller again could be a bit hard; for the group leader and the others left behind, it could feel like they are the only ones left. But then new resources would come and the group would grow again. It is however never pleasant to be part of a downward spiral.

One respondent from the humanities said that part of the problem when they formed a research group was that there were too few members; consisting of mainly three participants, while few of them had permanent positions at the university. The respondent had a position at
the university, while the other two did not, as they seemed to be unemployed, or located abroad. The discussion and the work they did was valued by the respondent, but they were not able to build an environment for many reasons, of which small group size was one. As the others did not have a formal affiliation to the university at this time, it was probably harder also to secure funds. The process lasted about a year where they met occasionally and tried to apply for funding in some cases.

4.5.3 Active Groups

Some groups stood out as more active throughout this thesis. One reason is that the members of the group need to share a common agenda for the group or an understanding of what the group is for. Where this was in place, the group seemed to be working as a whole on projects and in attaining new projects. Such commitment is reliant on other factors.

The composition of the group seems to be important. The groups that were interviewed had different group composition. By group composition is meant how the group is composed of senior researchers, mid-career researchers and junior researchers. There are several ways to look at that, but two simple models are top-heavy and bottom-heavy, with either many senior researchers or junior researchers. Three or four of the groups in natural sciences were quite bottom-heavy, with few at the top and with a clear hierarchy; one or two were not. In the humanities the groups were more top-heavy, but still several had a good many associated students and PhD candidates. Most of these groups worked quite well, and this could be partly due to the group composition.

One of the respondents had experiences with a group that was quite top-heavy and as a result functioned poorly. One of the groups had started as a relatively large group with four senior researchers. The leader of the group had little experience in that role and was constantly challenged by the more experienced members. This ended with a bad working climate which led to the group splitting in two later. The respondent later saw this as a bad arrangement as the established professors in the group did not make any room for the respondent to actually lead the group.

How the groups were established is also important. In the experimental sciences some groups seemed to be either “inherited” by their former leaders, or grew organically according to new research interests and new project allocations. One group was established for the purpose of
attaining funds from the change environment programme in the natural sciences. In the humanities all the groups had been initiated by the group members. They had found colleagues they wanted to work with themselves based on their academic interest and good work chemistry, or for strategic purposes. For the groups still active today they were quite happy with these arrangements, which worked as intended showing gains from working in groups. One group was however closed down after not being able to recruit members into regular positions at the university. In the humanities a respondent claimed mandatory participation in research groups were not a good idea. People should want it rather than being forced to take part, otherwise the consequences could be negative. How the groups were formed can be important in later practices that are established.

On being asked what made a well-functioning group, a respondent from the humanities said that flexibility and openness was needed. People should have the opportunity to give input and to be part of developing the direction and work of the group. The respondent appreciated that the group members would know different things; this was seen as especially important, as normally the professors are expected to know everything. Groups should discuss who is good at what, and enable the participants to work in a complementary way.

A respondent in the natural science saw that the composition of the group was important for a successful group. A too bottom-heavy group was not functional as the respondents saw it. One had to have all the levels represented, and in his field it was necessary with a pyramid structure of hierarchy. Ideally in a large group a postdoc or senior researcher would work as a lieutenant and second-in-command. The role of the postdocs and PhD candidates was very important in his field.

4.5.4 Communication Practices

Where some faculty units had elaborate information and communicated in a clear manner about the guidelines, criteria for membership and faculty units support, system of creating new groups, and had information about single groups available online, others had little information about their policies and guidelines, little or outdated information about the single groups, several inactive groups, groups with too few members, listed other units as networks, educational priorities, and other units. Therefore it was harder to obtain information from some of the faculty units, such as the natural sciences, than others.
This reflects research groups having long been seen as a natural entity at the faculty of natural science. As it is not questioned, there has been no need to have a deliberate information policy as an updated data park, or to have a clear meaning of what is meant by research groups. Where they have had to create systems for research groups it is seen that their communication practices are informative, neat and concrete as at the faculties for law, theology and educational sciences.

4.5.5 Different Faculty Units Take on Research Groups

What is clear is that there is no single University of Oslo approach to research organisation and research groups; it comes in many variations. At the different units of analysis it is found, in varying degrees, that the department, the faculty unit and individual members are part of shaping the structures to which they belong, through policies, practices, strategies and ambitions.

At the faculties of medicine and natural science, frameworks and guidelines for research groups have not been found. This is probably due to research groups being common there for a long time, and thus there is no need to define them or give guidelines on pertinent issues. Although changes have happened there as well, as non-experimental fields are expected to work in sections that resemble research groups and the other groups have gone through a formalisation process, research groups are not questioned. There seems to be little reflection on them as a unit, simply because they have been there a long time. This is what is called logic of appropriateness (March & Olsen, 2011, p. 2); research groups are simply seen as natural in their context. Thus no need is seen to provide the research environment with guidelines on research groups, although some missed having set guidelines from either the faculty unit or the institution. What is found at the natural science faculty is, however, the use of research groups as an instrument to stimulate excellent research and prioritisation processes, as described earlier.

It is at faculties where research groups have not been used before that guidelines are provided as part of a policy towards research groups. The faculty of educational sciences, law and theology stand out in this regard. They have all introduced faculty systems for research groups where all academics are expected to take part in a group. These faculties share several traits as to how the systems are constructed, but they also differ.
These two poles fit the operationalisation of legitimacy provided earlier. That it is when familiar organisations are unsatisfactory, or a satisfactory organisation is unfamiliar, that questioning regarding legitimacy is likely to occur (Deephouse & Suchman, 2008, p. 2). This means that as research groups are for most in the experimental sciences both familiar and satisfactory, they are not likely to question it, although where research groups are either unfamiliar or unsatisfactory some might question them, as in the humanities or in a few theoretical disciplines in the natural sciences.

At educational sciences a two-level system of research groups has been constructed; research groups may take part in a faculty-level tier or possibly department-level tiers (F. o. E. S. University of Oslo, 2015). In practice this means that it is the faculty-level tier that is the established system at their faculty, but there is a possibility to work outside of this tier with support from a department. A criterion to be recognised as a research group at the faculty level is about output indicators regarding publication level and quantity. In other words, the second tier is mainly a possibility to build an environment and develop expertise with the purpose of taking part in the faculty tier later. It could be an opportunity for younger researchers to build expertise in new research topics at the department.

In both theology and educational sciences there are strict criteria as to what is recognised as a research group. In educational sciences that means criteria on publication profile, minimum number of participants, the composition of the group members, and requirements regarding research time (F. o. E. S. University of Oslo, 2015). Research groups should consist of at least four members who are permanent academic employees and three junior researchers – including postdocs, PhD candidates and senior researchers, although exceptions could be made. All the permanent academic employees in a group should conduct all their research time within the group; this goes for the leader too. The publication profile is about how many publication points are produced over time. They are also expected to increase the number of level 2 publications. Applying for external funding through the national and European Research Council or other agencies would be assessed. Furthermore the research groups are expected to take part in international projects, establish international contacts for recruits such as Master’s students and junior researchers, and to collaborate internally in the group and across research groups and units – external, national and international (F. o. E. S. University of Oslo, 2015). At theology they see research groups in their faculty system as an entity to be led by a permanent academic employee from the faculty, and have at least three members that
are employees at the faculty of Theology (F. o. T. University of Oslo, 2013). If they comply with the criteria at the two faculty units, the research groups would receive some funding to finance their work from their faculty units.

A third trait is how the faculties deal with the thematic scope of the research groups. At the faculty units of educational sciences, law, and theology the research groups have a strong affiliation with their faculty units. The groups that have been established in theology seem based on topics that need to be covered at their faculty unit, possibly with educational purposes (F. o. T. University of Oslo, 2013). The research groups there seem to have a thematic scope, consisting of mainly internal researchers in a fixed number of groups. At law the groups were established in a similar way as a fixed number of groups each with a clear theme (F. o. L. University of Oslo, 2010, p. 1). These two faculty units are both part of small national environments and may be leading in their fields. These national responsibilities in their field may influence how they organise research.

4.5.6 Evaluations

At law and educational sciences they have evaluated and revised their programmes already. At the Faculty of Educational Sciences an internal evaluation led to the criteria for financial incentives in their system being revised (F. o. E. S. University of Oslo, 2015). They experienced that introducing the research group had been good for increasing publications. The evaluation found that the system they had should continue, but with some alterations. The alterations had to do with the number of levels the research group they operated with, and to change the criteria for monetary support. At the Faculty of Law an external evaluation assessed the system they had in place. They saw that the overall experience with research groups was positive and also recommended a continuation of the system. The research groups had met the purposes they intended to fill (F. o. L. University of Oslo, 2010, p. 28).

The research groups at law were established in 2005 in a thematic structure around six research groups intended to strengthen research collaboration across existing structures such as departments (F. o. L. University of Oslo, 2010, p. 1). According to the report, a clear advantage is that the research groups had softened what the report called rigid boundaries between the faculty, departments and educational subject groups (F. o. L. University of Oslo, 2010, p. 27). The positive effect of the research groups seems to be a broader research
orientation and openness for problems and methods, a larger scope nationally and internationally, and a better integration of doctoral candidates into the research environments.

Research groups were also seen as an instrument in finding the balance between addressing societal problems that are not directly covered by topics of the basic education, while maintaining a fundamental theoretical and dogmatic knowledge for legal competence was a recurring issue at their faculty unit (F. o. L. University of Oslo, 2010, p. 28).

The thematic structure was in some groups working as intended where groups experienced advantages with this organisational form; in others the initial structuration was cracking because of too-set thematic boundaries, and might later end up in several groups. Internal fragmentation happened where the converging theme of the group was seen as too broad. Often in these cases internal working groups had outgrown the formal research groups when it came to research topics or due to large projects they had. This caused two results: one is that they worked as strong autonomous groups within the group, only joining together at a weekly or monthly academic lunch (F. o. L. University of Oslo, 2010, pp. 3-5). The other is that the internal working group speculated if they would be better served as a research group of their own.

4.5.7 A Continued Renewal

According to the evaluation a well-functioning system would at all times have room for new groups to occur and that existing groups can be closed (F. o. L. University of Oslo, 2010, p. 29). According to the report:

“The main reason behind the success of the research groups is in the dedication enthusiasts have shown and do show. Experience shows that it is hard to maintain such a dedication in permanent, long-lasting structures. The determining factor thus becomes whether or not one is capable of creating an environment where new groups constantly emerge and develop.” (F. o. L. University of Oslo, 2010, p. 28, own translation).

If this is not taken into consideration what today is considered as an innovative structure may run the risk of turning into a rigid structure that does not enable innovation. Some of the systems put in place do not appear to have an inbuilt function that enables new groups to appear and the existing groups to be closed.
A respondent in the humanities wanted research groups to be flexible. The respondent saw it as a good thing that research groups could be terminated and new groups started. This meant that there was renewal and new ideas spread, as opposed to working with the same colleagues for decades as the department structured enabled. The respondent further operationalised this in a belief that if available venues for a period of time could be given to groups it would open up the possibility of new work dynamics, and break the existing structures. By opening up arenas for collaboration several times, one could learn more simply by collaborating with other colleagues. Another respondent said that research groups need to be dynamic and not static. At times it is natural that one has more collaborative work and at times it is natural that that ends. It is not always possible to know how the world or the projects would develop, and therefore a dynamic approach is needed.

In the next chapter a summary and concluding remarks are made about what has been discussed in this chapter. The chapter will also discuss the theoretical and practical implications of the thesis, about the thesis in general and identified research topics.

5 Conclusion

In order to answer the research problem of identifying drivers that lead to the manifestation of research groups this thesis has employed a multilevel emphasis, and multiple methods and data sources. The thesis has developed three arguments that have been present in the manifestation of research groups at the University of Oslo.

The first is that research groups are a necessary and a strategic unit. As resource suppliers have expected to see formalised research groups, the research groups need to show this. This is the case in natural sciences where a formalisation process has occurred, and an formation process at other faculties, as they too are expected to work in consolidated research environments. While it may not be strictly necessary with research groups, they may serve as an advantage for competing in securing resources where it is not. Organising through research groups is therefore seen as necessary to obtain resources, as it is what allocators expect. As a
result, research groups may therefore be seen as strategic actions to comply with external supply changes, since it is necessary for an organisation’s survival.

Different mechanisms lead to research groups being rewarded both from external allocators, e.g. the Research Council of Norway, and internal allocators, e.g. faculty units, as rewarding top-level research, formalised research collaboration, and prioritisation processes of research themes. For the research environments this means that a distinction between external and internal resources is not as relevant anymore, as they are increasingly measured by the same criteria both externally and internally. There are many resources that are important, but it is in particular research funding and job positions that are the most important to obtain.

The second argument is that research groups have become a legitimate unit. Research groups need to be seen as valid units both externally and internally if they are to be implemented successfully and not rejected. They are seen as legitimate units as they fulfil several functions of academic work. That is such functions as contributing to the quality of research, providing a frame for academic collaboration, providing a social working environment, research training, recruitment, research dissemination, contact with networks, and serving as a functional unit for highly specialised research. When it comes to research training in the humanities for example, research groups are important as they enable moving beyond the single supervisor and single candidate template that has long been used, and spreading the responsibility of mentoring and guidance to more individuals than one single professor. The candidates would probably learn more skills by working in a group, and in large research projects deal with more people and be better integrated within the research field. This is particularly important as there has been an increase in the number of PhD candidates and not in the number of senior researchers, which creates pressure on the existing structures. Therefore, better ways of integrating PhD candidates are important.

Since research groups fill such functions, they are more likely to be seen as a legitimate unit and accepted as a valid entity. This may be particularly important where research groups are in the process of being introduced or implemented where there was no previous tradition of working in research groups, as in the humanities.

The third argument is that research groups need to be a flexible unit. To simply implement research groups as a template from the experimental sciences would not serve the needs of disciplines other than the experimental sciences. By interpreting research groups according to
the needs of a particular research environment or sub-specialty, research groups can be designed to best serve the context. The thesis has showed that the different faculty units tend to have different approaches to implementing research groups when it comes to how they operationalise what a research group is, how they communicate about them, how the group is composed, the size of the unit, and the degree of consolidation and commitment within a group. This is not only an issue between the different faculty units, but also differs between departments and research groups. It is important that the research groups are not simply copied from a template from the experimental sciences, but are interpreted to best serve different needs.

By answering the research problem the thesis has also answered the question of why have research groups been established and formalised.

As research groups have long been seen to be a feature only in experimental sciences it is from that context that the literature on research groups has developed. Research groups have been considered to be good for efficiency and research quality, with the literature emphasising such factors as the role of the leader, group size, and internal communication. This thesis however, has sought to understand the extent to which research groups are used today and why they are used, from organisational and steering perspectives.

In this thesis a research group is understood as a group of scholars that constitute an entity with the purpose of academic collaboration. This definition allows for flexible understanding of what research groups are from different fields of science, not only the experimental sciences. Different types of scholars such as internal members and external members, and scholars at different levels from professor to students, can be included in this definition, as well as different organising forms and projects of academic collaboration.

The three arguments made should be seen in relation to how research groups relate to policy at national and international level. Increasingly to be considered among leading knowledge nations has become important in national debates and policy logic on research and higher education. This is partly due to the important role of The European Research Council and success in programmes as Horizon2020 today. More and more policies and debates concerning research are geared towards success in this regard, yet there are few direct steering mechanisms from the state, in the traditional sense of vertical steering, when it comes to institutional organisation. This thesis has argued that it is through networks and committees
that the ideas of efficient research structure and research collaboration are spread. This is done through many channels at different levels, but it is often done through horizontal ways of influence. As a policy logic has been established at different levels, even within the institution, more traditional steering instruments are used as steering with financial instruments, as the research council and the faculty units do, and strategic organisational work internally at the institution.

Another question that was asked initially is how do research groups unfold at the universities and coexist with the faculty units and the departments?

Faculty units and departments are important units at the university that still remain strong. The faculty unit is especially important for research groups as they often promote research groups as an instrument to achieve other goals. This is happening through allocation processes, policies, and introducing research group programmes for the whole faculty unit. This means that the faculty units have a strong role in influencing research groups.

As for the departments, they would often serve as host departments for some of the research groups, and were occasionally relevant for the groups financially. There seem to be a clear work division between departments and research groups. In general, the department deals with education and administration, and the research group solely with research matters. Issues such as personnel responsibility and accounting are the responsibility of the department, and this is not something that the research leaders would change, although it at times created some tensions.

The research groups do not appear to challenge existing structures in this case. They could rather be said to make an extra organisational layer, but in large parts the consolidated research groups seem to fill functional academic gaps that may not be served in the organisational landscape.

The last research question was what place do disciplinary differences have in this development?

The epistemological base of any discipline or field of study is of such importance for the work of academics that it has influenced the ways university units have been organised internally. This is why informal working units have long been a common feature in experimental science; it is an efficient work structuration that is suitable for organising many participants which enables systematic collaboration and specialisation.

72
This thesis has shown that a formalisation has happened in the natural sciences, as it is necessary to show formal entities in, for example, application processes. Although a formalisation process has occurred where there were previously working groups, probably few changes have happened other than that. As research groups are considered appropriate it may subject to logic of appropriateness; they are seen as appropriate and therefore are not questioned.

In the humanities, research groups have not been a common feature. The humanities have been known to have a much more individualistic approach to research where academics have tended to work alone, which has been reflected in their organisational structure. This thesis has showed that that notion is no longer valid, as research groups have become a common feature in different institutions, fields of science, and disciplines. This is triggered by external pressure, but has also been needed to gain internal acceptance to be legitimate. In certain environments this has happened.

As the humanities are assessed by the same indicators as other fields of science, their individualistic ways of organising have been increasingly challenged by such external actors as the research council. One of the respondents in this thesis stated that there was a pressure to find more collaborative working forms throughout the 2000s, and that a research group was a natural entity in which to organise with regard to their needs, since it was already an established entity for academic collaboration. The respondents did not see research groups to be incompatible with their discipline or fields of study, but rather saw consolidated groups as an advantage in their academic work that had the possibility of strengthening their disciplinary specialty. Receiving more resources, recruiting newcomers to their specialty and using the different members for different tasks and sharing the responsibility, were part of what the research groups did for their specialty that would be strengthened. As research has become highly specialised this was seen as important. Thus for those taking part in research groups in the humanities, they believed research groups were good for their research and specialty, and thus were compatible with the fields of study and discipline.

5.1 Implications

In discussing implications, the first to be dealt with are the theoretical implications, and then the policy implications.
Starting with disciplinary differences, this thesis challenges the notion of how the nature of knowledge and the disciplinary culture implies a certain research structure in the different fields of science. It is not a given that the nature of knowledge demands a solitary scholarship model, as has been the case in the humanities for a long time. As is seen in this thesis there are a number of single research groups and research systems appearing in the fields of science where it has not been common, and this has been happening for several years; so it is in some places the new normal. This shows that the notion of the nature of knowledge automatically demands a particular research template is not fixed – it is constantly changing according to other needs and trends – nor seen as the most fruitful work environment for all researchers in disciplines where the solitary researcher has been the norm.

As for the other theories used in this thesis – network governance, resource dependency, and neo-institutional theory – they are all seen to contribute to understanding relevant mechanisms that influence research organisation. Specifically, network governance has been used to understand how the state and the EU implicitly push an agenda, despite using few direct regulations. Resource dependency shows how research groups can offer competitive advantages in obtaining the much-needed external and internal resources. Neo-institutional theory has contributed with the concepts of legitimacy and isomorphism that have had a significant place in the analysis. These points in the theories are supported through this thesis, as they have been tested on a new issue.

When it comes to policy implications the thesis is especially relevant for faculty units and academics in the process of forming research groups.

Advantages of research groups have been mentioned throughout the thesis, although some will be repeated here. First, a research group seem to be a good unit for academics socially and academically. This is especially apparent where research groups have not been common, as those who work there would meet a more social working day. By forming an academic community, it is easier to keep including colleagues who are on different types of absence from the office. The issue of including colleagues on parental leave is one that is of particular concern. As an intensive career phase coincides with when it is likely to establish a family, ways to make young researchers stay in touch with their field and colleagues would be an important gender equality concern. This thesis indicates that research groups may be used to secure such contact. For senior researchers a more common concern is to fall away from the field and colleagues if one takes other job positions – internally and possibly externally. It
also brings down the cost of approaching colleagues. Working with colleagues in a designated physical venue is seen as good for academic communication between colleagues.

As one of the findings in this thesis is that research groups seem to be good for PhD training, this definitely has policy concerns as well. It is one way of moving beyond the vulnerable single supervisor relationship to a more plural relationship, where more people are involved in the process. It allows for giving the PhD candidates more generic skills through the doctoral period, as they encounter more arenas and colleagues. This relates to the practice of recruiting Master’s students into the group too.

One could see reasons for establishing research groups, but one needs to be aware of some issues. One is that the best results may be seen where the process of forming research groups is anchoring with the academics, either through them initiating a research group or being involved in developing a faculty system. If the academics themselves are part of forming their conditions, and have some influence in whom they will collaborate with, they seem to have stronger commitment to the entity. Commitment is essential for developing a common agenda – which often would be ambitious – that all or most members are committed to.

Having encouragement and support from the faculty or department level was seen as useful for those initiating research groups of their own. In financial means not much support may be needed to give such encouragement; it may be to support conference participation, writing seminars and events.

A flexible approach and different understanding of what research groups should be may have several benefits as previously discussed. It could secure an ownership of the entity by the members – or at least senior members – if they are allowed to form an entity as they prefer. In a research and development perspective to allow for flexible understanding of what a research group is would give more and different experiences and results of the same entity. This would give more variation to study and draw experiences from. It is after all a relatively new entity in many fields, and may yet go through different phases to gather the necessary understanding – both practical and theoretical – of how research groups work best in different scenarios.

Instruments need to be put in place to support well-established groups, but also make sure to implement a renewal mechanism. To support new research topics and groups is important
because maintaining the status quo may risk non-innovative research, and discourage the interest and initiatives of academics, often at the beginning of their career.

5.2 About the Thesis

Today research groups may play different roles other than what they have been considered to play before. This thesis provides steering and organisational perspectives to understand how research has developed and how it has developed in the direction it has. The organisational aspects that this thesis has focused on have only been sparsely covered in the earlier literature, as have research groups outside of experimental sciences.

A particular strength is the emphasis on humanities, and to a lesser degree other faculty units, that have not had research groups traditionally. It is in these instances that one can see how work has been transformed through organisational entities from an individual emphasis towards a pressure towards academic collaboration. The choices made, and reflections on research groups that derive from these faculty units, have allowed us to understand the development. Academics have had to make deliberate choices that fit their own needs.

This thesis has attempted to provide a definition based on some of the findings. What was important in making it was to be not too narrow regarding research scope, working forms, and composition of the group.

There are many limitations in every study. The methodological limitations are discussed in the methods chapter, therefore some limitations of more general nature will be mentioned here.

Some of the topics that have not been looked into too deeply concern education and regular members. The study does not discuss in detail what research groups do for higher education purposes. Nor does it make claims about the experiences of regular members and doctoral candidates, although that is important in its own right.

A limitation of the thesis is that, in a way, it stands alone. In many ways it shows a wide perspective through the survey and the comparative dimension of different faculties. However, more studies on the issue to compare it with would make the study not as alone as it is, and would have reduced the risk of the findings being case-specific to the University of Oslo, the specific faculty units, or Norway.
The thesis has not aimed to make causal claims about research groups in general, and this should be remembered in applying this study in other contexts. What the thesis has done is to provide several ways of looking at research groups.

5.3 Identified Research Topics

A central goal of this thesis is to identify more research topics related to research groups. This is especially important as the interest in research groups is growing, but still the knowledge on them is at an early phase where much still is to be learned from trial and error in the fields of science where they have not been in use for a long time.

First, having international comparison studies would be interesting. Are the same issues relevant in similar fields of studies or institutions internationally? As it is now, this study is too little grounded in other contexts. Only looking at the University of Oslo is more than enough for a Master’s thesis, but the study does depend mostly on one institutional context, which may very well be limited to this case. Making an international comparison would be interesting for testing the findings in this thesis. In an international comparison a particular area of interest would be for example whether research councils and faculty units have the same influence as seen in this thesis? In general, the aim with an international comparison or second study would be to examine whether the same steering practices occur or if there are interesting institutional policies that vary between countries.

Second, there are several structural dimensions that this thesis is not able to look into. Therefore, there are numerous structural factors that may differ between different institutions and type of institutions, in other units such as research centres, disciplines, and other groups of researchers or students. It is not a given that the same would be found at different institutions – even with the same profile as the University of Oslo – which may easily have their own institutional practices, not to mention single research fields which might have their own practices.

In Norway, for analytical purposes it is common to divide the higher education institutions into four types; old and new universities, university colleges, and specialised universities colleges. An argument made in this thesis has been that research groups are spreading out to different types of institutions – especially in the university colleges and specialised university colleges where the time for research is less than at the universities. Some forms of
isomorphism are expected to be part of driving this trend, as all higher education institutions in Norway would be subject to the same competitive pressure – in different ways and degrees – that makes it an advantage with certain research entities over others. To examine these forms of isomorphism in detail, and whether or not the internal mechanism at other faculties and institutions also encourage structured forms of research organisation, would then be of interest.

Furthermore, the differences between research groups and other entities taking in institutions that are less research-intensive – as university colleges formally and technically are – and in specific institutions as the Norwegian University of Science and Technology that have a stronger natural science and technology tradition, would be interesting. Would this change the relationship between research and education – as is given attention in a report from Oslo and Akershus University College of Applied Sciences (Buch et al., 2016, p. 13) – is one issue that could be looked into.

To go further into fields of science and specific disciplines is another issue. How are the practices that are established different from fields of science or specific neighbouring disciplines? And are there differences nationally within one discipline? These are some of the questions that could be developed in further studies. A specific one arising from the work on this thesis is incidences where faculties had initiated pilot projects in which they replaced departments with research groups, such as at the Faculty of Psychology at the University in Bergen (Borgen et al. in Kyvik et al., 2015, p. 36). The available information on this has been limited, and therefore it would be intriguing to further investigate not only the decision to do so, but also the consequences and the cost of doing so.

The data for this thesis are based on external survey material, document analysis and interview data from leaders of research groups. The two first data sources provide descriptive and other types of data, but the interview material shows the research leaders’ interpretations and experiences with this entity. The selection of research leaders has been useful in this thesis, yet they cannot represent other segments of those involved with research groups. Therefore, it naturally loses out on some segments of the members’ perceptions that are equally important to understand the advent of a new entity. For example, regular members in the group, who might sit with views on particular collaboration, and PhD candidates, who might sit with views on the PhD training within a group, are some of the relevant segments that are not represented. Others that might give other perspectives are university leaders at
higher levels – institutional, faculty and department – and interviews with external actors. By external actors could mean collaborating partners and employees in the Research Council of Norway – since the research council is a strong influence on research organisation.

Third, there are several issues that have been noted in this case study. The models found in law, theology and the educational sciences are an issue worth looking more into. They stand out from the rest of the faculties, but it has not been possible to delve into this due to the scope of the thesis.

Specifically, one could look at the fixed number of groups at the law and theology faculties to see how a given number of groups work, and to look at what the relationship to education is with the thematic frameworks they have. In educational sciences they have a more extensive policy practice than at other faculties, with more evaluations, criteria, and conditions than any of the other faculties have, regarding research groups specifically. This would serve as a good example of almost a regulative practice of how to implement research groups at a faculty unit, as is done at many Norwegian institutions now.

In research there are in general many tensions that one must balance that this thesis has not looked into. One that has looked into tensions is (Gulbrandsen, 2000, pp. 70-71); he claims that in research there are many organisational paradoxes that may be apparently mutually exclusive, yet need to be balanced. The tensions he identified are not as relevant here, but the focus he presents on inherent tensions that may have such different aspects as functional, motivational and originality in research, could be relevant for future research on the topic. A tension that has been noticed in this work is that between the high degree of organisational structuration at some faculty units, and a more laissez-faire attitude at other faculty units. Both of these strategies may be both beneficial and have disadvantages. For instance, in a faculty framework one would know that transparency of the conditions within which to operate is present, and in a laissez-faire approach the research groups might grow in a more organic way to the existing needs. One might risk overregulating an organisational change in a structure that does not change easily, or one might risk too little guidance on a desired development.

Another tension would be between static and dynamic systems for research groups. The fixed number of groups at some faculties may have been set according to what research is needed, as at theology, where some topics would have to be covered for educational purposes, and the
special position the faculty has in the national context. In law it is seen that the large groups – in number of members – they originally started with, are not all still working as intended (F. o. L. University of Oslo, 2010, p. 29).

These examples show some tensions with the design of their systems, but do not seem to allow for starting new research groups or closing groups down. Starting new research groups could allow for building a new specialisation, and for new or junior researchers to create their own group. Although the aims of these systems are well intended and reflected on, not allowing for creating new groups could run the risk of not being innovative enough, and stifle initiatives from academics. This could be associated with keeping young researchers motivated and allowing them to find their niche. How this tension between creating systems for maintaining the status quo – or the perceived responsibilities of a faculty unit – and creating systems that enable new groups to emerge, would be of interest as it touches upon knowledge and specialisms, as well as academic steering. It also relates to allowing research groups to fade out and cease to exist when there is no remaining common agenda or commitment to the group.

In this thesis the Research Council of Norway research council is seen to be an important influence directly and even more indirectly on research groups. To examine what the relevant policymakers there and their external subject reviewers – for programme allocations – think of research collaboration in general, and specific forms of it as research groups, would be essential to understand an important influence upon this trend. One could look at how deliberate their strategies are, where it comes from and what they think consequences would be to their strategies.
Literature list


Buch, R., Federhofer, M.-T., & Kristiansen, S. (2016). Evaluering av forskergruppene ved Fakultet for samfunnsfag - Rapport fra evalueringsutvalet. Retrieved from Oslo:


Tusen takk for at du har satt av tid til intervjuet. Masteroppgåva mi er ein del av eit prosjekt ved NIFU, her er ein tidleg rapport som utgår frå prosjektet. Intervjuet vil bli anonymisert og bør ikkje ta meir enn 45 min. Om det er greitt for deg så kan me starte ved å sette på opptakeren no.

**Tema (bør vere innom)**

**Introduksjon**
- Kan du kort fortelje om stillinga du har og fagfeltet ditt?
- Kan du fortelle om di erfaring og roller knytta til forskergruppe?

**Ide, føremål, og mål**
- Kva er «meininga» med å organisera i forskargrupper?
- Kva føremål tener forskargrupper?
- Jobbast det mot særskilte mål på kort og langt sikt?

**Framvekst**
- Når blei det danna forskargrupper her på fakultetet?
- Kan du fortelle om prosessen bak framveksten? - Kva låg bak oppretting og framvekst?
- Kven tok initiativ til forskargrupper på ditt fakultet? (pådrivare, bottom up vs top down)
- Var det særskilte modeller av forskargrupper som fungerte som inspirasjon? (naturvitenskapelege, medisinske, myke fag) - Ble alternative organiseringsformer vurdert?
- Korleis vil du skildre forskergruppene her? - Typisk størrelse på gruppen?

**Konsekvenser**
- Kva betyr det for forskarar å jobbe i forskargrupper?
- Korleis påverkar det forskingsleiing?
- Kva skal til for å ha ei velfungerande gruppe? (storleik, mål, samarbeid, samansetning)
- Kva fordeler er det med å organisere seg i forskargrupper?
- Kva ulemper er det med å organisere seg i forskargrupper?

**Funksjonar**
- Kva funksjoner har forskargrupper i dag/her?
- Kva er typisk samansetning av forskargrupper her? Er det ulike typar medlemsskap? (Vanlige, eksterne, tilknytta personer, mailieiste) (senior, midlertidige, stipendiater, teknisk personell)
- Kva aktiviteter er knytt til forskargruppene? (seminar, tilbakemelding, labarbeid osv)
- Korleis jobbar ein med forsking? (felles prosjekt, ulike prosjekt, medforfatterskap, grad av samarbeid)
- Korleis blir forkingstema bestemt?
- Korleis er forskargruppa knytt til utdanningfunksjonen, læring og opplæring? (phd., master, tilknyttede program)
- korleis jobbe ein med rekruttering i / for forskargruppene?
- kan du fortelle om ulike typar medlemskap som vanlig medlem, eksterne medlem og tilknytta personer?

### Styring, finansiering, koblinger til andre enheter
- Kva betyr nasjonal styring viktig for organiseringa av forskninga i forskergrupper? (politiske signaler, finansieringssystem og insentiv, publiseringsspress, SFF og SFi , andre verktøy)
- Kva betyr internasjonal styring viktig for påverkar forskningsorganisering og forskergrupper? ( midler frå EU, midler frå andre, politisk styring med andre midler)
- i kva grad trur du val av forskningsorganisering er del av nasjonale og /eller internasjonale trender?

### Finansiering
- Kan du fortelje om forskergruppa/ enes finansiering?
- Får forskergruppa driftsmidlar? Kven frå? Må ein fylle kriterier eller anna for å få det utdelt?
- Korleis forhold forskargruppa/ -ene seg til ekstern finansiering?

### Koblingar til andre enheter
- Korleis er forholdet til institutta? Fordeling av ansvar, arbeidsoppgåver? (personalansvar, administrative oppgåver, samarbeid)
- Kva betyr det for institutta at mykje blir organisert i forskeroppgåver
- Korleis er forholdet til fakulteta? Koordinering, retningslinjer?
- Er det andre eininingar eller styringsnivå på universitet som er av betydning?
- Samarbeider de med andre forskergrupper?

### Disiplin
- Korleis påverkar fagområdet (og forskingas eigenart i dette fagområdet) måten ein organiserer forskinga på i fagfeltet?
- I kva grad trur du denne organiseringa er vanlig i denne disiplinen/ fagområdet?
- Kvifor / kvifor ikkje?
- ser du at forskergrupper er spesielt heldig for nokre arbeidsformer, fagfelt eller føremål?

### Avrunding
- Kva er dine refleksjonar rundt bruk av forskargrupper?
- Kva bør ein vektlegge i forskingsorganisering generelt?
- Korleis trur du organiseringa av forsking utviklar seg vidare?
- Er det noko du ønsker å legge til om det som er snakka om?

Tusen takk for tida di. Eg set stor pris på det.
Consen form

Forespørsel om deltakelse i forskningsprosjektet

"Research Groups as an informal structure in Research organization"

Bakgrunn og formal

Hva innebærer deltakelse i studien?

Hva skjer med informasjonen om deg?
Alle personopplysninger vil bli behandlet konfidensielt. I hovedsak vil jeg ha tilgang til dataene, og i mindre grad mine veiledere. For å sikre konfidensialitet vil navneliste bli lagret adskilt fra øvrige data.
I senere publisering vil det siktes mot at en ikke kan gjenkjenne deltaker.


**Frivillig deltakelse**
Det er frivillig å delta i studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli anonymisert.

Dersom du ønsker å delta eller har spørsmål til studien, ta kontakt med Aina Alvsvåg. Eventuelt mine veiledere.

Aina Alvsvåg. Student. Tlf. 41523602. [Aina.alvsvag@nifu.no](mailto:Aina.alvsvag@nifu.no)
Agnete Vabø. NIFU. Hovedveileder. [Agnete.vabo@nifu.no](mailto:Agnete.vabo@nifu.no)
Peter Massen. IPED, UiO. Biveileder. [Peter.massen@nifu.no](mailto:Peter.massen@nifu.no)

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.
Samtykke til deltagelse i studien

Jeg har mottatt informasjon om studien, og er villig til å delta

(Signert av prosjektdeltaker, dato)

☐ Jeg samtykker til å delta i intervju

☐ Jeg samtykker til at personopplysninger kan publiseres/ lagres etter prosjektslutt