Summary

Academic leadership, here with respect to scientific research and its organisation, is set in a changing research landscape. In these changes, policy interventions play a role, but just as important are general long-term trends that lead to transformations in the research and innovation landscape. Research organisations such as universities respond proactively through which certain developments such as globalisation are strengthened. Research organisations are themselves in transformation, and go through what I call transformation pathways.

Academic leadership develops in practice and is affected by the overall transformations, while leading academics themselves help to shape transformation paths. Academics work in national and international networks in which increasingly social partners play a role. They consider in which direction to strike out, and actively participate in coalitions and arrangements that themselves evolve in the practice of leadership. Leadership practices and organisational change mutually influence each other.

In this thesis, the distributed nature of leadership practices is central: divided between academics and distributed over time and across professional spaces. Individual characteristics conducive to leadership, however important, are less important for the questions of this thesis than leadership-activity patterns in which several academics play a role and which develop in interaction with organisational change and organisational learning. To be effective, there will be attempts to reduce the complexity of the transformations but without denying them, particularly by including the ambiguities of transformation. This is an entrance point in order to identify important characteristics of distributed leadership-activity patterns.

The complexity of the transformations is visible in the European higher education landscape and universities "in transition" since the sixties, including greater autonomy (in the Dutch higher education system) and differentiation of universities. At the same time, there are transformational developments in scientific fields, particularly in emerging areas such as nanotechnology, IT and open systems, bio-science and biotechnology, which lead to multidisciplinary 'fusion' areas of research and innovation. In tandem, there is a new kind of research organisation, originated inside or outside universities, which combines excellence and relevance of research - as it were a new species in the research ecosystem. In this kind of new research organisations formal leadership patterns are insufficient and challenges are addressed by distributed academic leadership. These are sites where evolving distributed academic leadership can be studied.

The University of Twente is a good location for such studies. In the eighties the university became known internationally as an "entrepreneurial" and "innovative" university, in the forefront of the "entrepreneurial universities" in Europe (Clark, 1998). In the period from mid-eighties and mid-two thousands, a number of initiatives took place both in education, research and innovation, and in the bottom-up development of informal networks of distributed academic leadership. This was not unique to the University of Twente but there it was explicitly thematised, so the University is a good basis for the study of distributed academic leadership in emergent research organisations.

This thesis is a long-term study (fifteen years, about 1990 to 2005) in the recent history of transformations in the research landscape, based on three case studies of emergent research organisations in the fields of nanotechnology, ICT and Open Systems, related to the University of Twente. The case studies are based on interviews with actors, archival research in the research institutes involved and the University of Twente, and personal observations as a participant observer in research organisations in the past thirty years. Besides my immediate tasks as staff in the universities of Twente and Dortmund, in the Telematics Institute and as general secretary of the European Consortium of Innovative Universities (ECIU) I reflected about what happened and tried to understand patterns.

Context and themes are introduced in the first three chapters of the thesis. A conceptual model for organisational change, distributed academic leadership and learning organisations is developed, and further operationalised in the chapter on the research design. The conceptual model has three distinctive features:

- organisational change is approached as a process of "contrasting dynamics";
- the focus is not on competencies of leaders, but on leadership activities that arise in practice, distributed leadership practices;
- in the long-term pattern analysis of distributed leadership practices organisational learning processes are central.

The collection of empirical data has a focus on informal, entrepreneurial, and ambidextrous leadership constellations in emergent research organisations. Chapters 4, 5 and 6 present the three case studies of research institutes: MESA + Institute for Nanotechnology (originally MESA, focusing on micro systems technology), CTIT, Centre for Telematics and Information Technology, both at the University of Twente, and TI, Telematica Institute, originally TRC , Telematics Research Centre, with a strong relationship with the University of Twente.

Each case chapter begins with the specific context of the case and the details of data collection. Each case is divided into three episodes that present developments in a given period. The history of organisational development and leadership practices is interesting in itself, and provides the prelude to analysis. Distributed leadership arrangements are traced for strategic programming of research, interacting with the development of convergent projects (materialising connecting themes in research projects) and development of new business models (where conditions are developed of work organisation, funding and career that do not comply with what is usual within the university system). The final section of each case chapter briefly outlines how the development of the research institute continued, followed by an initial analysis of the case, preparing for the overall analysis in Chapter 7.

Chapter 7 first presents an overview of the cases based on the key concepts in the conceptual model. This makes clear that there are certain patterns (discussed further in Chapter 8), of which I present the highlights here.

Firstly, there is a new process layer of distributed academic leadership activities in the university organisation: an intermediate level between research institutes, Faculties and the Central Board, stabilising in spaces and arrangements linked to leadership practice, sometimes resulting in temporary formal management positions.

Secondly, it is clear that distributed leadership activities are to some extent orchestrated. This was done explicitly and top down in the Telematics Institute. There is also delegated orchestration, from some senior academics, often with a formal management position. This is particularly visible in CTIT. Horizontal, collegiate orchestration is visible in the first phase of CTIT, and MESA +.

Thirdly, there seems to be a pattern in the development of the learning organisation, in which specific distributed leadership practices evolve and institutionalisation occurs. Three phases are visible in the case studies, each covering three to five years.

- A first phase in which entrepreneurial leadership practices are central, where experimenting takes place with new organisational forms and practices. Academic leaders are mandated - limited – freedom, and/or acquire such freedom so as to experiment, as it were in “protected spaces”. Constellations of bottom up leadership practices emerge.
- A second phase of stabilisation of change processes: constellations of top-down orchestrated leadership practices play a role in this stabilisation and connections are

created, characterised as ambidextrous leadership activities that balance exploration and exploitation through development of new working practices., in which academic leaders can jointly reflect and anticipate (double-loop learning).

- A third phase builds on more or less stabilised practices and arrangements by allowing specific developments to suit new situations and scientific domains, a differentiation process as sociologists would call it.

The three phases are visible in each of the cases. Differences can be characterised as strategic science (MESA +), open innovation (Telematics Institute) and mode-2 knowledge production (CTIT). In the final chapter, I throw the question of whether there is a degree of repetition of these phases, or rather a new pattern in the context of new business models. Tensions between the continued growth and diversification of emergent research organisations and university system in which they function, limit further growth of new models or encourage academic leaders to develop new initiatives.

The co-evolution of arrangements and leadership learning continues, often quite practical and thematic, as in more or less structured communities around the governance of multi-year multi-partner research programs, which emerge as alliances and evolve into "Schicksalgemeinschaften".

Apparently, academic leaders succeed in collaboration and realisation of new arrangements, thus creating common futures, while at the same time they must meet high individual performance requirements and expectations. For them, understanding the processes of co-evolution of organisational change and distributed leadership practice is important in order to overcome an exclusive focus on immediate and short-term problems.