

## RESEARCH ARTICLE OPEN ACCESS

# Strategy as Practice—Multilevel Institutional Work to Induce Change in Higher Education

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## ABSTRACT

The characteristics of institutional work in higher education change is an understudied topic in research. This article describes an institutional change process in higher education by analysing multilevel institutional work. Drawing on the results, the paper presents a modified process model on the multilevel institutional work and the related micro–macro linkages. The model describes how micro-level strategy work connects with organisational strategy, the macro-level development and policy. Based on the results, the institutional change in higher education is characterised by the interplay between practice work and boundary work in a process, which has special characteristics at different stages. The empirical focus of the study is in the engineering and technology education in Finland. Using a theory-informed, mixed-methods single-case study design, this study explores the characteristics of multilevel institutional work and transformation mechanisms. The results generate theoretical knowledge on the micro–macro linkages of the institutional change process in higher education.

## 1 | Introduction

According to institutional theory, organisational survival and success are linked to legitimacy (Meyer and Rowan 1977). Organisational success depends on the support the organisation receives from its different constituencies, and therefore, legitimacy can be defined as the congruence of organisational results with institutional norms (Arnold et al. 1996). The challenge of understanding institutional change has attracted theoretical and empirical interest in higher education over the last few decades (Brankovic and Cantwell 2022). Political, economic and social pressures strive universities towards strategic collaboration with stakeholders (Corazza and Saluto 2021; Pekkola et al. 2018; Rogers 2019) and universities have adopted new managerial models from the business in order to manage the growing demands (Erkkilä 2014; Dobbins 2017; Tahar and Boutellier 2013). Studies on organisational change and some of the mechanisms

to promote it have been conducted (e.g., Bouckennooghe 2010; Caldwell et al. 2009; Pettigrew et al. 2001). According to a recent systematic literature review (Khaw et al. 2023; Patala et al. 2017) studies have mainly focused on the role and characteristics of individuals and their change reactions for the successfulness of the organisational change (Alfes et al. 2019; Beare et al. 2020; Borges and Quintas 2020; Oreg et al. 2011; Oreg and Berson 2011; Tyler and De Cremer 2005; Vakola et al. 2013; Walk and Handy 2018; Whelan-Berry et al. 2003). However, research has not covered the actual transformational mechanisms of institutional work to induce change in higher education (Seo and Creed 2002).

When studying institutional change in higher education, the environmental aspects need to be taken into account. How organisations legitimate actions under conditions of institutional change in general is a central yet reasonably little understood

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question (Patala et al. 2017). The literature on incumbent organisations emphasises the inertia inherent to established organisations—incumbents easily hold to established practices, change slowly and do not adopt new ideas or innovations easily because they typically benefit from the status quo—the existing state of affairs and therefore have little motivation for changes (DiMaggio and Powell 1983; Greenwood and Suddaby 2006). More research is needed to examine incumbents' legitimacy-seeking behaviour in different fields (Patala et al. 2017). In general, innovating incumbents typically employ a three-step process in inducing change: creating saliency for change, mitigating reservations against the desired change and institutionalising it (Purtik and Arenas 2019). Practices involve shaping-oriented knowledge flows, which seek to influence stakeholders in the external environment (Purtik and Arenas 2019). Adaptation-oriented practices allow organisations to adapt to the changing institutional environment (Rindova and Courtney 2020). Combining both types of knowledge is particularly crucial when the institutional environment changes (Bogers et al. 2019). As needs for change evolve over time (Moeen et al. 2019; Vargo et al. 2020), being able to shift between adaptation-oriented and shaping-oriented knowledge flows seems to be an important dynamic capability for organisations (Schweitzer et al. 2022).

Without taking into account the internal responses to external legitimation, we cannot fully understand the social formation of legitimacy as a dynamic process (Drori and Honing 2013). Previous research has overlooked how legitimacy emerges and evolves within new organisations (e.g., Drori and Honing 2013), particularly from an internal perspective. Neither has prior research specifically examined the evolution of the dynamic relationship between internal and external legitimacy formation in organisations (Drori and Honing 2013). In this paper, I bridge this gap by studying how a university as an incumbent organisation manages different interests and induces institutional change by strategic institutional work.

Due to national regulation in higher education, the reforms, general, discipline specific or university specific, are always at some level political (Välilmaa 2001). In higher education, political decision-making has strong effect on the development of the whole higher education system, individual universities and development of disciplines. Furthermore, universities affect each other by different strategic actions (Stenvall-Virtanen 2023). In this study, the 'change in higher education' refers to an organisational level strategic change process in one university. This study contributes to the institutional theory and strategy research that aims at understanding the characteristics of multilevel institutional work in an institutional incumbent change in general, as well as connected transformation mechanisms in higher education in particular. This paper also contributes to the theory of organisational legitimation by connecting internal and external legitimacy and by examining their relationship through examining institutional work as strategic actions in a competitive higher education environment. Central to institutional work is the idea of institutional agency and work being integral components of legitimacy formation in an organisation (Seo and Creed 2002). This paper analyses multilevel institutional work in an incumbent change process in higher education by applying theoretical approach of dialectical institutional change (Seo and Creed 2002) and strategy as practice. In other words, the study

answers to the question on how the interests and means of influencing of internal stakeholders affect an institutional change process in higher education and how in practice change and legitimacy are induced.

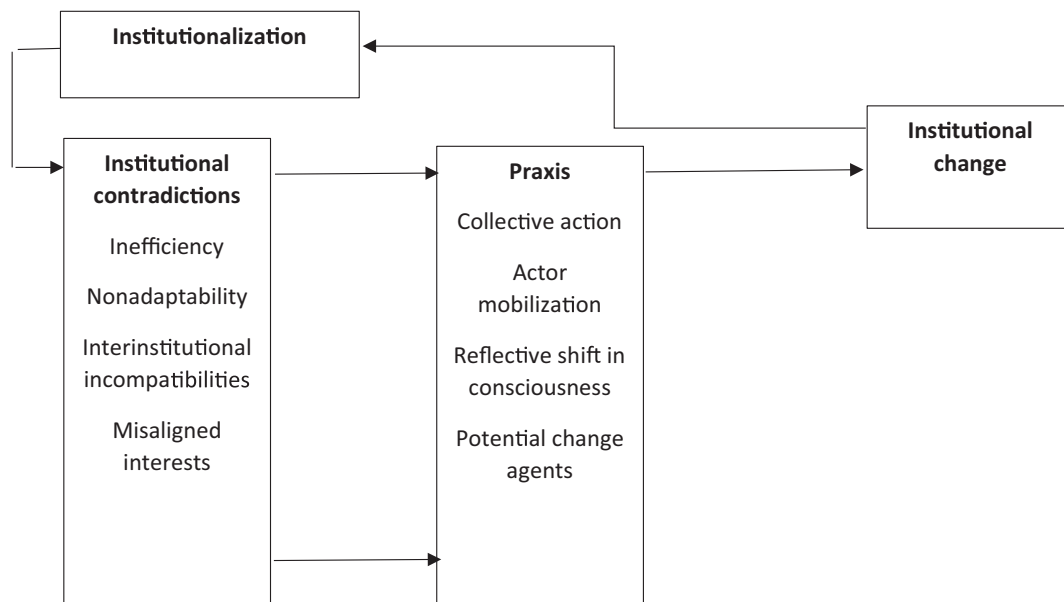
The structure of this paper is the following: First, the theoretical background introduces the existing body of knowledge in the field of organisational change and strategy as practice. The following section explains the methods, research data and the case employed in this study. After this, the results of the study are presented and discussed, and finally, the paper concludes by evaluating the theoretical and practical value of the findings.

## 2 | Theoretical Framework

Organisational change is possible through embedded agency and activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones (e.g., Fumasoli and Huisman 2013). Institutional change is an outcome of the dynamic interactions between two institutional by-products: institutional contradictions and human praxis (Seo and Creed 2002). From a dialectical perspective, the accumulation of contradictions creates tensions and provides the seeds for action and institutional change (Seo and Creed 2002). According to Seo and Creed (2002), the potential for an institutional change increases if there exists a fundamental misalignment between the existing social arrangements and the interests of actors because this increases the potential of institutional challengers to arise. The degree to which an institutional arrangement is misaligned with the interests and needs of its members is related to the emergence of praxis by affecting who will arise as change agents (Seo and Creed 2002, Figure 1).

According to Seo and Creed (2002) institutional contradictions and human action are the key mediating mechanisms linking institutional embeddedness and institutional change. The dialectical perspective understands institutional change as a process where actors drive their interests (Seo and Creed 2002). The accumulation of contradictions in interest-driven stakeholder actions within and between institutions induces institutional change. Actions lead to new social interactions that, through institutionalisation and change, become legitimised and accepted (Seo and Creed 2002). However, the model for institutional change by Seo and Creed (2002) does not specify the actual mechanisms through which multilevel actions in practice enhance institutional change (Seo and Creed 2002). The concept of institutional work emphasises the relationship between institutions and individuals (Lawrence et al. 2011), and the ways institutions are affected by action (Lawrence et al. 2009; Lawrence and Suddaby 2006). Understanding of individual-institutional dynamics and the role of interests and strategic action in change in higher education is still an understudied topic (Hasanefendic et al. 2017).

There are three institutional pillars, which make and support all institutions (Scott 2014) and help to understand institutional change. The regulative, normative and cultural-cognitive elements of organisations set boundaries for actions by restricting the opportunities and alternatives and by increasing the



**FIGURE 1** | Institutional contradictions, mobilisation for reconstruction and collective action for institutional change (Seo and Creed 2002).

probability of certain types of action and behaviour (DiMaggio and Powell 1983). Each institutional pillar provides a different basis for institutional work. According to Scott (2014), the regulative pillar emphasises conformity to regulation, rules and legal requirements. Based on this, institutions build internal regulatory processes, monitoring and sanctioning. The normative pillar consists of values, norms and social rules stresses as a moral base for institutional work and specifies how things should be done and defines legitimate means to pursue valued ends, goals and objectives (Scott 2014). The cultural-cognitive pillar builds the cognitive frame for organisational behaviour. A cultural-cognitive viewpoint builds on the common definition of the situation and framework of meanings, roles and structure of an organisation (Hanson 2001). Rather than stressing the reinforcing obligations (normative approach), the cultural-cognitive approach points to the power of templates for certain types of actors and their scripts for action (DiMaggio and Powell 1983; Scott 2014; Meyer and Rowan 1977).

### 3 | Strategy as Practice

Strategy as practice approach focuses on strategic management, decision-making, strategy-making and strategy work (Golsorkhi et al. 2015; Jarzabkowski et al. 2007; Johnson et al. 2003) at the micro-level and analyses what actually takes place in strategy formulation, planning and implementation, in other words, in those activities that deal with the thinking and doing of strategy in an organisation (Golsorkhi et al. 2015; Schatzki 2002). The core question is how institutional work and institutional structure are linked together at organisational level (Schatzki 2002; Bourdieu 1990; Giddens 1984; Sztompka 1991). A fourfold typology of strategic actions of middle managers analyses different types of institutional work and enabling conditions for strategic institutional work by two dichotomies: upward vs. downward activity and integrative vs. divergent activity (Floyd and Woolridge 1992). Championing alternatives and synthesising information towards the management represent upward forms

of involvement, while facilitating adaptability and implementing strategy are downward forms (Floyd and Woolridge 1992).

Organisational strategy work spreads out across many levels, from the level of individual actions (and actors) to the institutional level; it always takes place in a specific social context and is socially structured consisting of individual activities (e.g., Jarzabkowski 2005; Whittington 2003; Mantere 2005). Strategising is defined as the enactment of organisational strategy through organisational member practices (Delmas and Toffel 2008; Jarzabkowski and Fenton 2006). Institutional work describes the actions of individual and collective actors aimed at creating, maintaining and changing institutions (Lawrence et al. 2011; Lawrence and Suddaby 2006; Jepperson 1991; Oliver 1992). Action is embedded in institutional structures, where it simultaneously produces, reproduces and transforms structures, practices and regimes (Greenwood and Suddaby 2006) or new social logics (Suddaby and Greenwood 2005). The typology of institutional work by Lawrence and Suddaby (2006) is commonly used for analysing forms of institutional work in detail in different organisational contexts (Canning and O'Dwyer 2016; Gidley and Palmer 2021; Henk 2020; Zietsma and Lawrence 2010).

Institutional work can be grouped into three broad categories: creating, maintaining and disrupting institutions (Lawrence and Suddaby 2006), where 'creating' consists of openly political institutional work to reconstruct rules, property rights and boundaries that define access to material resources (Elsbach and Sutton 1992; Fox-Wolfgramm et al. 1998; Galvin 2002; Russo 2001); to construct identities (Lounsbury 2001; Oakes et al. 1998), normative networks (Townley 1997; Zilber 2002), to change organisational norms (Lawrence et al. 2002; Orsato et al. 2002) and to alter existing abstract meaning systems (Hargadon and Douglas 2001; Jones 2001; Kitchener 2002; Lounsbury 2001; Orsato et al. 2002; Woywode 2002). Institutional work to 'maintain' institutions involves social mechanisms that maintain, support and ensure compliance

(Lawrence and Suddaby 2006) through enabling work (Leblebici et al. 1991), policing (Fox-Wolfgramm et al. 1998; Schuler 1996) and deterring (Holm 1995; Townley 1997) and mechanisms that reproduce norms and belief systems through valorising, demonising and mythologising (Angus 1993) and by embedding and routinising (Townley 1997; Zilber 2002). Coercive institutional work ‘disrupts’ institutions and involves deinstitutionalisation, for example, through defining and redefining sets of social concepts (Suchman 1995), redefining actors and their relationships (Greenwood and Hinings 1996; Lawrence 2004; Lawrence and Suddaby 2006), disconnecting sanctions (Jones 2001; Leblebici et al. 1991), disassociating moral foundations (Ahmadjian and Robinson 2001) or undermining assumptions and beliefs (Leblebici et al. 1991; Wicks 2001). These forms of institutional work are classified as practice work, whereas boundary work represents attempts of actors to create, shape and disrupt boundaries between individuals or groups (Gieryn 1983, 1999). The interplay of practice and boundary work creates cycles of innovation, conflict, stability and destabilisation that induce institutional change (Zietsma and Lawrence 2010).

Strategy as practice approach provides an opportunity to analyse how concrete micro-level actions are linked with institutional strategy work (Vaara and Whittington 2012). This link has been studied especially in discursive analyses of strategy by focusing on the ways in which strategy discourse is used to legitimise or resist specific ideas and to promote or protect one’s own power position (Laine and Vaara 2007; Mantere and Vaara 2008). Additional research has been made on how strategies become legitimised and naturalised through the extensive use of particular discursive practices (Vaara et al. 2004). However, many other aspects are less studied, for example, institutional complexity and strategic institutional work (Smets and Jarzabkowski 2013); the social and organisational practices that constitute strategy and strategising (Golsorkhi et al. 2015) and connections between institutional work and institutional outcomes and the institutional work itself (Lawrence et al. 2013).

Strategising and organisational behaviour in higher education is typically seen to be steered by the demands and pressures from the external legal, social and political environment (DiMaggio and Powell 1983; Powell and DiMaggio 1991; Frølich et al. 2013; Hasanefendic et al. 2017). However, higher education institutions also strategically reshape their institutional environment based on internal interests and characteristics (Stensaker 2006; Fumasoli and Huisman 2013; Gornitzka and Stensaker 2014; Pinheiro et al. 2016; Mampaey 2018; Donina and Hasanefendic 2018). In fact, strategic actions of higher education institutions affect both the individual organisation and the wider institutional environment (Whatley and Castiello-Gutiérrez 2022; Christensen and Gornitzka 2017; Frølich et al. 2013) as universities actively drive change by calculated actions that break the existing institutional structures and chain of decision-making, which gradually leads to change (Stenvall-Virtanen 2023). In higher education, there is still room for research on legitimisation, practical implementation of change and the micro–macro linkage of institutional work—the actual change process and connected mechanisms to induce higher education change by institutional work tend

to be understudied (Golsorkhi et al. 2015). In this case study, presented theoretical aspects of institutional work are used to understand the process of institutional change and the connected transformation mechanisms in higher education. Drawing on the results, the author presents a modified multilevel process model for the institutional change in higher education.

## 4 | Research Context and Methods

### 4.1 | Case Description

In Finland, the higher education system consists of 13 science universities and 23 universities of applied sciences. Engineering and technology research and education are conducted in nine science universities, which all have their unique scope and profile in engineering. The degree education at universities is legislated and regulated by the Decree and its amendment (Ministry of Education and Culture 2009, Universities Act 558/2009). In the legislation, the engineering and technology education in the science universities is divided into 13 separate sub-fields, and universities can offer degrees only in the fields assigned to them in the Decree (Ministry of Education and Culture 2009; Opetus- ja kulttuuriministeriö 2023).

The University of Turku (UTU) is one of the multidisciplinary science universities founded in 1920. UTU is also one of the oldest universities in Finland. UTU has eight faculties in the fields of education, medicine, social sciences, economics and business administration, science, law and technology. The university has been educating ICT and biotechnology engineers for over 20 years, but the more extensive offering in the field of engineering and technology is quite a recent development since only in 2019, and after this, UTU has received extended educational responsibilities in the field of engineering and technology.

First new educational responsibilities included mechanical engineering and materials engineering. After these, the university has received additional responsibilities in electrical and automation engineering (2021) and industrial engineering and management (2023). Along with these educational expansions, the university has launched new degree programmes and leveraged degree education in the more mature fields of engineering education as well. Currently, the university offers nine national engineering degree programmes, which are complemented by international bachelor’s and master’s degree programmes.

The case study in this article focuses on the internal interests and process of extending and developing the degree education in engineering and technology at the University of Turku from 2016 until the end of 2023. During these years, the organisation of the engineering and technology education at the university has changed a couple of times and the study focuses on this development at the multidisciplinary university. In 2016–2028, the University of Turku educated engineers only in two engineering and technology fields: biotechnology and ICT. The volume of the education was modest and the education was organised in the same faculty with the natural sciences.

In 2018, the name of the faculty was changed from the Faculty of Mathematics and Natural Sciences to the Faculty of Science and Engineering to better take into account the engineering fields. In 2020, the university board made the decision to separate the education into two faculties as the volume of the engineering and technology education had grown significantly. The new faculty, Faculty of Technology, started operating at the beginning of 2021. After this, all engineering and technology degree education has been organised in the Faculty of Technology.

In the end of 2023, UTU had educational responsibilities in six engineering and technology fields.<sup>1</sup> The Faculty of Technology is one of the largest faculties at the University of Turku with over 3000° students and 550 staff members. In terms of applicants, the University of Turku is currently the most successful university in Finland. In the engineering and technology education, the student admission rate has grown due to new fields of education positioning university as a middle sized among universities in engineering and technology in Finland. Due to the institutional change and remarkable impact that UTU has had in the field of higher education in engineering in Finland, this strategic change process is an interesting research case and has both practical and theoretical significance in the field of institutional change in higher education.

This development process has changed the engineering and technology research and education environment and organisational structure at the University of Turku. Furthermore, the extension process and the establishment of the new faculty have changed the disciplinary structure of the engineering and technology education in Finland and also the higher education policy regulating higher education (Stenvall-Virtanen 2023). After UTU was granted with the new education responsibilities in the field of engineering and technology, also other universities have applied for and been granted new educational responsibilities in the field, which has further changed the disciplinary field. This case study addresses the characteristics of the institutional work needed to strategically induce the change.

## 4.2 | Methods

To answer the research question on how internal actors and their interests drive and legitimise institutional change in higher education, a process-oriented approach was adopted to explain the temporal order of internal institutional actions. The process approach is commonly used for example in higher education policy studies (e.g., Isopahkala-Bouret et al. 2021). Furthermore, a practice-oriented approach was utilised to examine the process in more detail at the level of institutional work (Lawrence and Suddaby 2006). A single case study design allows to understand in-depth relationship between internal actors and to get a contextualised insight on complex phenomena (Welch et al. 2020).

This paper describes the institutional change as an internal process of institutional work driven by interests. The administrative data used in the study describes the underlying interests and the institutional work at different phases of the change process describing how the change in the university setting was in practice induced. In this study, the institutional actions are considered as

expressions of interests and as end results of institutional sense-making processes. However, the analysed data did not include records of the background discussions or micro-level sensemaking considered as iterative discursive processes through which people collectively or individually build opinions or assign meaning to issues or events (Weick et al. 2005).

The hermeneutical process of analysing data was an iterative process of shifting back and forth between empirical data and analysis, until an adequate understanding of interest and institutional work and its characteristics was reached. In order to increase the validity of the analysis, the researcher conducted the analysis based on publicly available empirical material. In some cases, the empirical data did not provide the researcher with adequate information on the action and the underlying interests of the university board. In these points, the researcher conducted three fact-checking interviews to clarify the underlying interests and the actual process of related actions, which aimed at strengthening rigour and minimising potential bias in the analysis. The semi-structured fact-checking interviews were all done with the vice-rector at the university, who had been present in the board meetings.

To communicate the grounds for rigour and trustworthiness of the study the researcher's contribution to different aspects of the interpretive analysis process were made explicit (Johnson and Waterfield 2004) by drafting a codebook on the used codes and their meanings in the analysis, featuring definitions and illustrative examples of each code. The Codebook is based on deductive coding starting from the theoretical framework, documents the research process and provides a deeper insight into the data by verifying the coding (Table A1, Appendix A).

## 4.3 | Research Data

The empirical material consists of administrative text documents outlining the institutional change as an internal process in a time frame of 2016–2023. This period was chosen for the case study to capture the long-term development process leading to the institutional change. The research material consists of written administrative documents that together depict the internal institutional actions during different phases of the process and include all formal documented administrative material that is connected to the extension of the technology and engineering education at the University of Turku: for example, memoranda, working groups' decision materials and reports, propositions for extension of the educational responsibilities of the University of Turku. The total number of studied administrative text documents was 268. The list of written text documents and information on the number of documents by document type are given in Table 1 below. Semi-structured fact-checking interviews ( $n = 3$ ) were conducted to complete the understanding of the data in three institutional actions. All studied documents are public or semi-public and accessible by request. These documentary sources of data were chosen because they have high validity and are accessible data sources. This was viewed as further enhancing the study's transparency and replicability (Mackieson et al. 2019). The examples of strategic actions presented as empirical evidence, have been retrieved from the data and been translated from Finnish to English. In the translations, the

**TABLE 1** | The list and number of written text documents by document type.

- The Technology Campus Turku establishing and collaboration agreement in 2018 ( $n = 1$ )
  - The Technology Campus Turku annual plans of action in 2019–2023 ( $n = 5$ )
  - The Rector's decision to set up a working group for extending the engineering and technology education at the University of Turku in 2019 ( $n = 1$ )
  - The working group for the extension of the engineering and technology education, meeting memoranda including supporting documents in 2019 ( $n = 6$ )
  - The mid-term report from the working group in 2019 ( $n = 1$ )
  - The final report from the working group in 2019 ( $n = 1$ )
  - Field specific working groups (5) and their mid-term and final reports in 2019 ( $n = 17$ )
  - A special group for organisational development of the engineering and technology education, meeting memoranda including the supporting documents ( $n = 2$ )
  - The final report from the organisation development group to the rector in 2019 ( $n = 1$ )
  - The rectors' decision to set up a steering group for the extension of the engineering and technology education at the University of Turku in 2020 ( $n = 1$ )
  - The meeting memoranda of the steering group, including supporting materials ( $n = 6$ )
  - The Faculty Council of Science and Engineering & Mathematics and natural sciences in 2018–2019 ( $n = 41^*$ )
  - The mid-term report and final report to the rector from the steering group in 2020 ( $n = 2$ )
  - Rector's statement to the University Board on the progress of the extension of the engineering and technology education at the university in 2020 ( $n = 1$ )
  - The University Board's meeting memoranda including supporting materials in 2018–2023 ( $n = 71^{**}$ )
  - The managerial planning documents of the new Faculty of Technology in 2020 ( $n = 10$ )
  - Written proposals for the Ministry of Education and Culture on the extended educational responsibilities of the University of Turku in the field of engineering and technology in 2017–2023 ( $n = 4$ )
  - Written statements of the student union and student guilds on the extension of the engineering and technology field and on the potential establishment of the new Faculty of Technology in 2020–2023 ( $n = 17$ )
  - Written statements of the departments of the Faculty of Science and Engineering on the extension of the engineering and technology field and on the potential establishment of the new Faculty of Technology in 2020 ( $n = 9$ )
  - Written statements of the faculties and independent units at the university on the extension of the engineering and technology field and on the potential establishment of the new Faculty of Technology in 2020 ( $n = 12$ )
  - The final report on the interviews of the faculty staff and students on the organisation of the engineering and technology education at UTU (external researcher) in 2020 ( $n = 1$ )
  - The final report on the staff and student survey on the organisation of the engineering and technology education at UTU (external researcher) in 2020 ( $n = 1$ )
  - Workshop for the management of the new Faculty of Technology, memorandum of the workshop in 2020 ( $n = 1$ )
  - The final report of the university-wide, collaborative online survey on the development of the Faculty of Technology in 2020. An online canvas with 7 different themes/topics with a total of 524 individual comments and suggestions from the staff and students. ( $n = 1$ )
  - The recruitment of the dean for the new faculty, applications in 2020 ( $n = 7$ )
  - The recruitment of the dean for the new faculty, open interview, interview transcriptions in 2020 ( $n = 7$ )
  - Recruitment decisions, professors and assistant professors at UTU in the engineering and technology field in 2018–2023 ( $n = 19$ )
  - Cross-studying agreements on teaching collaboration with other universities in 2020–2023 ( $n = 10$ )
  - Establishment decision and meeting memoranda on the advisory group for the establishment of the Food Technology degree programme, meeting memoranda including supporting documents ( $n = 4$ )
- Total number of studied text documents is 268.

Note: \*, \*\*The number of documents include only those meeting memoranda which included issues concerning the extension and strategic development of the engineering and technology education and have been thoroughly analysed. The total number of documents that was examined during the years 2016–2023 is higher.

original connotations and meanings have been preserved as fully as possible.

#### 4.4 | Data Analysis

A mixed-methods study design was utilised to analyse the research data. The analysis was carried out combining both qualitative and quantitative data analysis methods. The analysis was conducted in three phases, starting with a qualitative document analysis method (Bowen 2009). Document analysis

is a systematic procedure for reviewing and evaluating documents for finding, selecting, appraising (making sense of) and synthesising data contained in documents. Document analysis thus always involves an iterative process of skimming, thorough examination and interpretation (Bowen 2009) and refers to identifying and extracting patterns of meaning in the data (Staller 2015). Such a grounded approach was useful for generating a deep understanding of this particular case.

First, the document analysis method was used to recognise different actors and their institutional actions from the data. The

list and description of the key actors are presented in Table B1 (Appendix B). Altogether, six different key actors and 523 actions were recognised. The later phase of document analysis involved input from the existing theory and can be described as abductive, where ‘a constant movement back and forth between theory and empirical data was necessary’ (Wodak 2004). Actions were categorised as enabling vs. disabling and upward vs. downward according to the typology of managerial actions presented by Floyd and Woolridge (1992). Additional categorisations of actions were made by classifying them according to the type of institutional work (Lawrence and Suddaby 2006), more detailed classifications found in previous research, innovativeness (Chesbrough and Appleyard 2007) and the three pillars of institutional legitimacy (W. R. Scott 2014). All the characteristics were described in the codebook, which also presents the references to the previous research and examples of each code (Table A1, Appendix A).

In the analysis, three watershed moments were recognised from the data. These watershed moments are critical points which create discontinuity in the process of connected strategic actions and in which new institutions and structures typically emerge (Hall 2010; Ruonavaara 2006). By recognising the watershed moments, three separate episodes in the change process were identified.

In the second phase, quantitative methods were used to understand in-depth relations between the actors and their institutional actions. Frequencies of actions by actors and by different classifications were calculated and described in Tables C1 and C2. Furthermore, a statistical analysis was performed with R statistical software (R Core Team 2021). The chi-square and Fisher’s exact tests were used to determine whether there is a statistically significant difference between the actor groups in terms of different types of institutional work. The significance threshold was set at 0.05.

## 5 | Results

In this study, theoretical aspects of the micro–macro linkage of institutional work were used to explain the legitimation formation, process of change and the connected transformation mechanisms in higher education. This study focused on the emergence of legitimacy and the internal process of change, addressing the characteristics of strategic institutional work. To address more closely the characteristics of institutional work aiming at inducing change and strategically building legitimacy, this study focused on the internal strategic actions that took place at the university in different phases of the studied change process (in 2016–2023).

### 5.1 | Institutional Contradictions as Seeds for Institutional Change

In 2016, the engineering and technology education at the University of Turku did not meet the industry needs for graduates or manage to secure the positive economic development in the region. The engineering and technology education was inadequate both in terms of volume and content. At the national

level, the Ministry of Education and Culture made political decisions, which centralised engineering education to universities that already had an extensive volume of education in the field. External demands from industry and the existing disciplinary structure in higher education led to inter-institutional incompatibilities and functional inefficiency. Situational factors defined by the political and disciplinary environment, stakeholder interests and institutionalised norms and practices conflicted with the day-to-day functional needs at the University of Turku and paved the way towards change.

In the analysis, different actors and their institutional actions were recognised from the data. Altogether, eight different key actors and 523 internal institutional actions were found. A list and description of actors are presented in Table B1 (Appendix B). The number of strategic actions and identified watershed moments are presented in Figure 2 below. The majority of institutional actions throughout the process were incremental. Only 24 (5%) out of 523 actions were classified as disruptive. All different stages included disruptive actions, the number and role of which are described in more detail in the following analysis.

In the initial phase of the change process (2016–2017) the number of actions was low and the majority of the actions were enabling institutional work targeted to support routines and develop disciplinary capacity by, for example, increasing the volume of the degree education. Regulative actions were used, for example, to introduce and create new degree programmes. In terms of the number of actions, the main actor was the old faculty. However, in 2017, two disruptive upward actions laid the grounds for the institutional change: the board of the university approached the Ministry suggesting extended educational responsibilities in the field of engineering and technology. This proactive strategic action marked the first watershed moment in the process. Even though the proposal itself was not supported, it disrupted the disciplinary boundaries. The university continued strategic incremental development, for example, re-named the responsible faculty to the Faculty of Science and Engineering<sup>2</sup> signalling commitment to the structural development of the discipline at the multidisciplinary university.

In 2018, there was a clear, yet small, gradual increase in the number of strategic institutional actions intended to build

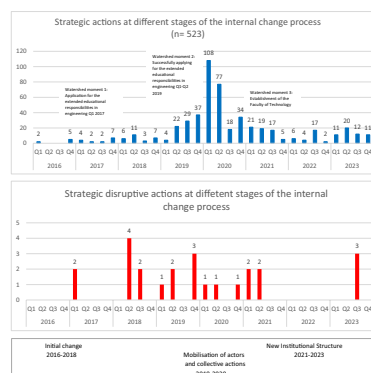


FIGURE 2 | The number of strategic actions and watershed moments in the institutional change process in 2016–2023.

internal legitimacy by institutional work targeted to create new institutional processes and practices. The main actor was the old faculty. In this phase, the number of disruptive actions was the highest ( $n=6$ ) during the studied timeframe. The faculty made one disruptive action *xx*. Altogether, 5 out of 6 disruptive actions were interconnected and marked a clear reflective shift towards the institutional change. The actions were done by a new intermediate organisation and were connected to the establishment of the regional technology network, consisting of four higher education institutions, the City of Turku and the Turku Science Park. This agreement on collaboration to enhance the technology environment in the region and the introduction of a new strategic actor to operate in the interface were both normative by nature.

## 5.2 | Actor Mobilisation and Institutional Work to Proactively Induce Change

In order to demonstrate the micro–macro connections between multilevel strategic institutional work, the characteristics of actions were categorised in frequency tables (Tables C1 and C2 in Appendix C). The non-parametric Chi-square and Fisher's exact tests were used to test whether there was a statistically significant difference in one or more categories of actions between the actor groups. Results that yielded  $p$  value under 0.05 were considered statistically significant. According to the performed tests, there were statistically significant differences between the actors in all four examined research variables. In the behavioural influence of the actions the reported  $p$  value was  $p < 0.001$ ; in innovativeness the reported  $p$  value was  $p = 0.002$ ; in legitimacy  $p < 0.001$  and in the type of institutional work  $p < 0.001$ . The Contingency Tables and Cross-tabulations with  $p$  values are presented as Supporting Information that is accessible by request. The limitations of the data based on the frequency distribution did not allow the use of further statistical tests to analyse more closely the differences between actors and their institutional actions. The main observations below are therefore based on descriptions of different types of institutional work, frequencies and percentages of actions.

In 2019, the number of legitimacy building internal actions was 92 in total, which was clearly higher than in previous years. The main institutional actor at this was the established working group at the university, which conducted 60% of all actions. At this stage, 86% of institutional work was targeted at creating new structures by using regulative actions to propose new degree programmes and educational responsibilities. The actor in these actions was the old faculty. However, disruptive regulative actions ( $n=6$ ) at this stage included the process of renewing the application to extend the educational responsibilities in engineering, to which the Ministry this time responded positively. This decision was characterised by two disruptive actions that disrupted the higher education policy in Finland. Furthermore, it was a watershed moment both inside the university and in the field of higher education in engineering as it led to extensive changes not only at university but also at the disciplinary level in Finland.

After the Ministry's formal decision on granting the new educational responsibilities, the rector of the university appointed a

working group to make an overall plan for the organisation and content of the engineering and technology education. External stakeholders, other higher education institutions, industries and internal stakeholders were engaged in the institutional work. The pedagogical reform was in practice managed and implemented by an intermediate organisation, the Technology Campus Turku, by building frameworks, standards and definitions for the engineering education and degree structures. These were important strategic actions, which started a new phase in the institutional change process. The volume of the institutional work increased towards the end of the year. The work entailed numerous definitional, incremental and mostly normative actions concerning renewing the logic of action, challenging the existing structures, processes and practices and advocating and enacting new social arrangements to put decisions into practice. In the end of 2019, the working group recommended the establishment of a new faculty to organise the engineering and technology education and research at the university, which was characterised by interconnected internally disruptive actions ( $n=4$ ).

The year 2020 marks an exception in the examined research data. The number of institutional actions (237) was 40% more than the total in the previous 4 years together. The main actor was again an intermediate organisation, an advisory group established by the rector, which conducted 44% of all actions. At this stage actions were connected to the development of the organisational structures at the university and the administrative establishment process of the Faculty of Technology, which was characterised by internally disruptive actions ( $n=3$ ). The old faculty, rectors and the university board played important roles in putting the decision into practice and making sure that the change proceeded inside the university. Institutional work at this stage included also defining standards, rules, processes and frameworks for the new organisation. Characteristic was a high number of actions connected to argumentation on the reasons why the new faculty was needed. In addition to the working group, other faculties and units at the university were also engaged. A total of 35% of all actions were connected to institutional work where different actors, students, other faculties and units at the university, the rector and the steering group, were actively engaged in developing and elaborating categories of meanings, frameworks and new forms of practices and collaboration to support the formation of the new institution.

When analysing years 2019–2020 together, one notices that institutional actions differed from the previous years in a sense that the majority of the actions were either normative or cultural-cognitive. In 2019, altogether 72% and in 2020 also 45% of the actions were normative. Furthermore, the number of cultural-cognitive actions was the highest (36%) during the studied process. In previous years, a clear majority of institutional actions in all actor groups had been regulative. In 2020, the institutional work included also disabling cultural-cognitive actions. Disabling cultural-cognitive actions by the old faculty ( $n=13$ ) and by the students ( $n=11$ ) were connected to the organisational development and potential establishment of the new faculty. Actions reflected internal tensions, which are otherwise not visible in the formal administrative documents used as research data. Especially, the old faculty and students utilised discursive resources to maintain the old structures by providing

negative examples on the potential establishment of the new faculty.

### 5.3 | The Institutional Change and Legitimacy Formation

The establishment of the Faculty of Technology in the beginning of 2021 was the third watershed moment and internally disruptive action at the university, which started the third episode in the institutional change process. The research data show that after the establishment of the new faculty, the need for the intermediate structures, for example, the working groups, diminished. In 2021, the number of institutional actions for inducing change stabilised, showing institutional work but not reaching the high peak of actions recorded in 2019–2020. The total number of institutional actions was only 26% (62) of the volume of actions in 2020 (237). Only 21% of all actions were recorded for the Technology Campus Turku, whereas 44% of the actions were conducted by the new faculty.

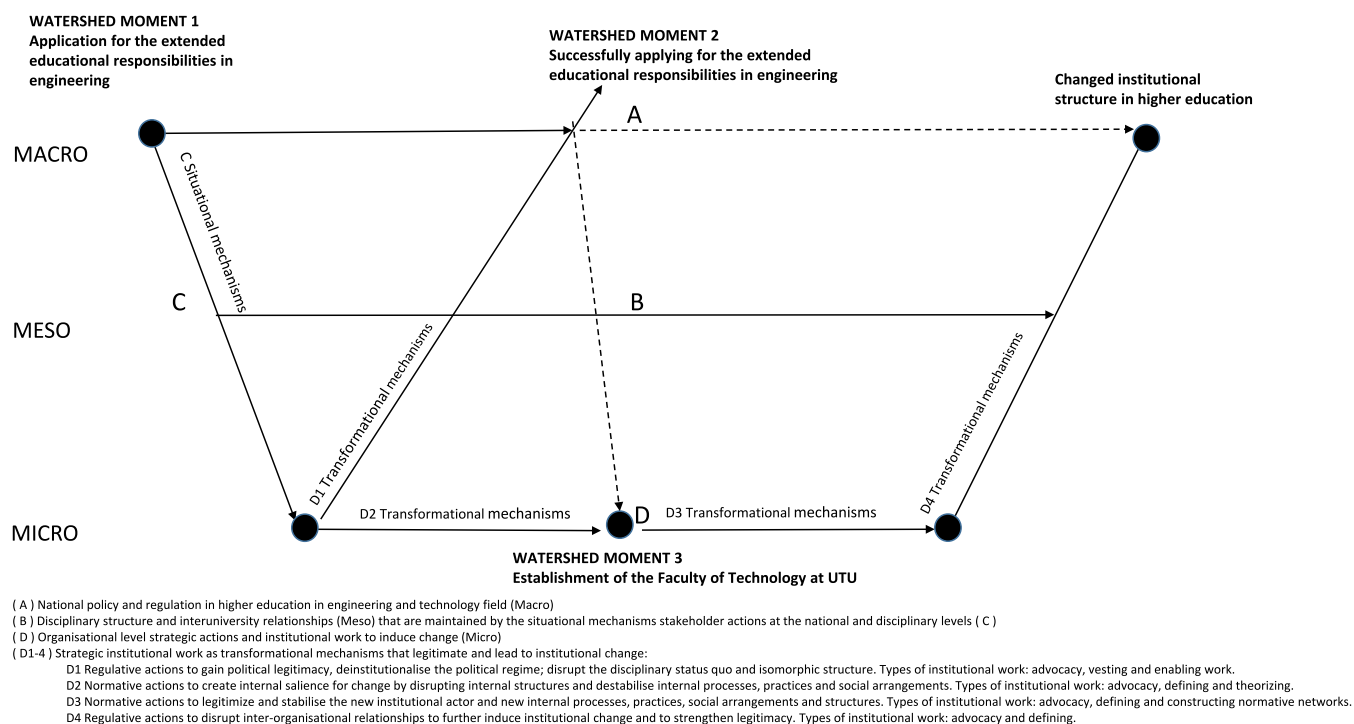
The institutional legitimating actions in this phase were typically normative and incremental. Characteristic of the institutional work in 2021 was the relatively high number of actions targeted at constructing normative networks and collaboration structures. Other disruptive actions in 2021–2022 concerned the application of the extended educational responsibilities in engineering and technology, which again disrupted both disciplinary structures and the internal regimes at the university by strengthening the engineering and technology education at the multidisciplinary university. The last two years (2022–2023) were quite modest in terms of the volume of institutional work related to the institutional change—only 10%–25% compared with the number of actions in 2020. Actions were characterised

by normative, incremental work by the new faculty. The data did not include any record of disruptive actions during the last studied year. In 2023, the university board conducted altogether 31% of all actions, including incremental, normative actions aiming to create and strengthen the disciplinary capacity, defining resources and frameworks to support the new institutional structure.

### 5.4 | The Institutionalisation of the New Organisational Structure

In the previous sections, the internal institutional change process in higher education was analysed as different types of institutional work to actively induce change by different actors. The process was characterised by the interplay between multilevel practice work and boundary work (Gieryn 1983, 1999) and was mainly induced by incremental actions, which were accompanied by calculated and timely disruptive actions. The process included altogether 523 actions out of which 24, that is less than 5%, were disruptive. Despite the low number of actions, the role of disruptive actions seems to be essential in strategically facilitating change in higher education.

According to the results, institutional work that legitimates and transformation mechanisms that induce change in higher education at different stages differ from each other. Based on the results, a modified multilevel process model for institutional change in higher education was drawn (Figure 3). The model describes the transformation mechanisms and characteristics of the institutional work at different stages of the change process in higher education. The model builds on the process model for change in higher education (Stenvall-Virtanen 2023).



**FIGURE 3** | A modified multilevel process model for institutional change in higher education (adapted from Coleman 1990 and Stenvall-Virtanen 2023).

In the initial phase, institutional contradictions, more specifically inter-institutional incompatibilities, operate as seeds for change in an incumbent organisation such as a university. At the first stage (D1) strategic regulative actions are used to gain political legitimacy and deinstitutionalise the existing political regime. Micro-level transformation mechanisms are targeted upward and break the chain of political decision-making; disrupt the disciplinary structures and other situational mechanisms that maintain institutionalised disciplinary structures at macro-level. The actions also include enabling work needed to carry on institutional routines, diverting resources and creation of new actors or roles to ensure institutional development.

At the second stage (D2), internal actors are mobilised and engaged, and the institutional actions to legitimate change are normative rather than regulative. The actions create internal salience for change. Institutional work typically focuses on the defining and construction of rule systems, creation of standards and defining frameworks and boundaries. Characteristic of the transformation mechanisms at this stage is that actions are targeted downward to destabilise old processes, practices, social arrangements and logics of action at the micro-level. At the third stage (D3), the transformation mechanisms are normative and targeted downward to put administrative rules, regulations and decisions into practice. Institutional work is targeted to create and stabilise new institutional actors, structures, processes and new social arrangements at the micro-level. Finally, regulative institutional work is again utilised to disrupt inter-organisational relationships to strengthen external legitimacy (D4) by transformation mechanisms that further disrupt the disciplinary level. The outcome of the change process is a new institutionalised structure.

## 6 | Discussion

Previous research has shown that higher education institutions are affected by their wider institutional environment (Whatley and Castiello-Gutiérrez 2022; Christensen and Gornitzka 2017; Frølich et al. 2013). In higher education, institutional change develops through external and internal processes by which organisations adapt to institutionalised pressures (Powell and DiMaggio 1991) and field demands (e.g., Fumasoli and Huisman 2013; Stensaker et al. 2014; Pinheiro et al. 2017; Mampaey 2018; Hasanefendic and Donina 2022). While legitimacy is often associated with external endorsement (e.g., W. R. Scott 2001) internal actions also play a vital role in legitimacy building in change processes. Change in higher education is not only accommodation to external pressures—an university can also actively drive change by calculated institutional work (Stenvall-Virtanen 2023). Even though higher education change has been widely studied, previous research has overlooked the connections between institutional work and institutional change as an outcome of the institutional work itself (Lawrence et al. 2013; Golsorkhi et al. 2015). This study has addressed this gap by analysing how institutional actions are used to put strategy into practice. More specifically, the results unveil characteristics of institutional work that are driven by interests and strategically used to induce and legitimise institutional change in higher education.

Strategy as practice approach (Schatzki 2002; Bourdieu 1990; Giddens 1984; Sztompka 1991) provides us with tools to analyse how concrete micro-level institutional work links with broader institutional practices and strategy work (Laine and Vaara 2007; Mantere and Vaara 2008). Organisational change is known to occur through institutional work (Lawrence and Suddaby 2006), strategic actions and embedded agency (e.g., Fumasoli and Huisman 2013; Seo and Creed 2002). However, research has not fully covered, for example, strategic institutional work (Smets and Jarzabkowski 2013) or the social and organisational practices that constitute strategy and strategising (Golsorkhi et al. 2015). The results and the modified multilevel process model for higher education change presented in this study help to understand the process of change by analysing characteristics of multilevel institutional work and related transformation mechanisms in higher education.

Inter-institutional incompatibilities, non-adaptability and inefficiency can drive both revolutionary and gradual change in an organisation (Seo and Creed 2002). Gradual change happens through a reflective shift in consciousness or change agents, while revolutionary change happens through a reflective shift caused by an institutional crisis (Seo and Creed 2002). The results of this case study confirmed the former type of institutional change in the incumbent environment in higher education. In this case, the accumulation of institutional contradictions provided seeds for the institutional change; inter-institutional incompatibilities and situational mechanisms led to the emergence of change agents whose strategic actions introduced a gradual reflective shift in consciousness, inducing change and mobilising actors without institutional crisis. At the disciplinary level in Finnish higher education, the external legitimacy of universities is characterised by the interplay between the universities and the Ministry of Education and Culture (Stenvall-Virtanen 2023). It has been shown that in higher education, the existing political chain of decision-making, the inter-university relationships and taken-for-granted disciplinary assumptions form inter-university tensions (Stenvall-Virtanen 2023).

Results of this study have furthermore unveiled the characteristics of institutional work and the actual transformation mechanisms at different stages of the internal change process. Based on the results of this study, the model for institutional change through institutionally embedded agency (Seo and Creed 2002) seems to apply reasonably well in the incumbent institutional change in higher education. A detailed analysis of the characteristics of the institutional work engendered more knowledge on the related transformation mechanisms in higher education.

It is known that incumbent organisations typically employ a three-step process in inducing change: creating saliency for change, mitigating reservations against the desired change, and institutionalising it (Purtik and Arenas 2019). This process seems to apply also in organisational-level change in higher education. The modified multilevel process model for higher education change presented in my study illustrates the causal macro–micro relations, where macro-level actions cause micro-level actions, which in turn engender new actions at the macro-level or as micro-level institutional work. Transformation mechanisms inducing change at different stages have different characteristics and micro–macro linkages.

In the initial phase, macro-level situational factors give rise to micro-level managerial regulative actions that deinstitutionalise the existing political regime and disrupt the isomorphic disciplinary structures. By using types of institutional work found in previous research, the most common types of actions were categorised as advocacy (Galvin 2002), vesting (Russo 2001) and enabling institutional work (Leblebici et al. 1991). After the initial phase, normative micro-level actions destabilise the existing internal structures and social arrangements through institutional work, which is characterised by advocacy and defining (Fox-Wolfgramm et al. 1998). In addition, forms of theorising (Kitchener 2002; Lawrence and Suddaby 2006; Orsato et al. 2002; Suddaby et al. 2002) are used to strengthen the cultural-cognitive pillar, to build a common definition of the situation and framework of meanings and scripts for action (DiMaggio and Powell 1983; Hanson 2001; Meyer and Rowan 1977; Scott 2008). In this case study, the change process was in practice managed by intermediate organisations through definitional work (Fox-Wolfgramm et al. 1998), including building frameworks, standards and definitions for the engineering education and degree structures. In 2019–2020, internal actions reflected internal tensions, which otherwise are not visible in the administrative text documents used as research data. This kind of institutional work was based on valorising and demonising (Angus 1993) where discursive resources were targeted to maintain the old structures by providing negative examples of the potential establishment of the new faculty.

In the third phase, micro-level normative actions stabilise and institutionalise new internal processes, practices, social arrangements and structures. Typical types of institutional work at this stage were classified by types of institutional work defined in previous research: advocacy, defining and constructing normative networks (Lawrence and Suddaby 2006; Orsato et al. 2002). Finally, regulative micro-level actions disrupt inter-organisational relationships at the macro-level to further induce institutional change and to strengthen legitimacy by advocacy and defining.

According to the results, the institutional change process in higher education is characterised by the interplay between multilevel practice work and boundary work (Gieryn 1983, 1999). In this study, institutional work through advocacy, theorising, vesting and constructing normative networks represented boundary work. The change-inducing role of disruptive boundary work in the process was decisive, especially in destabilising existing isomorphic structures at macro-level and in creating internal salience for change at micro-level. Boundary work resulting changes at micro-level were typically performed by intermediary actors.

The results of this study show the characteristics of the multilevel institutional work in higher education change. Typical types of institutional practice work have in previous research been classified as creating and maintaining institutions rather than deliberately disrupting institutions (Lawrence and Suddaby 2006). The results of this study confirm that change in higher education is indeed induced mostly by gradual change and continuous improvement and development. Disruptive institutional work recognised in previous research, for example, disassociating moral foundations (Ahmadjian and Robinson 2001) or heavily

undermining assumptions and beliefs (Leblebici et al. 1991; Wicks 2001) does play some role in the change, but the change is first and foremost induced by building new institutional practices, processes and structures to replace the existing ones.

The modified multilevel process model for institutional change in higher education presented in this study draws an interesting picture on the micro–macro linkages in higher education change and shows how strategy works in practice, how micro-level institutional work is connected to the organisation level strategy work, and how an individual university in practice affects the macro-level development and higher education policy.

## 7 | Conclusion

In this paper, I have studied the relationship between internal and external legitimacy formation, demonstrated how concrete micro-level actions are linked with broader institutionalised practices and strategy work, and analysed strategic change-inducing actions in higher education. This article describes an institutional change and legitimacy formation process in higher education from an internal perspective by analysing institutional work. The results reveal characteristics of institutional work and related transformation mechanisms at different stages of the institutional change process.

While the presented modified multilevel process model for institutional change in higher education is not perhaps widely generalisable, I believe it offers new insights for scholars examining the micro–macro linkages of legitimation and multilevel institutional work. The results can be utilised in higher education management in general and in strategic change processes in particular. Knowledge can also be applied in other incumbent organisational environments.

The empirical data in the study includes administrative text documents in the period of 2016–2023. The analysis of the institutional actions in different phases of the change in higher education describes a gradually proceeding change process through incremental actions accompanied by strategic disruptive actions. One limitation of the analysis is that it does not offer a fully comprehensive picture of the change process. The material utilised in the study does not, for example, reveal tensions between internal actors during the change process, because these are mostly hidden in the background discussions and are not recorded in the formal decision-making and administrative documents. Another limitation is that the cultural-cognitive aspect (Scott 1995) of the institutional change process remained mostly hidden and can only partly be analysed. A deeper analysis of the cultural-cognitive aspect thus remains a potential topic for further research in incumbent change in higher education.

Retrospective interviews could have provided the analysis with additional information on the tensions and the internal sense making, but discovering these ex-post would have also created possibilities for bias and hindsight. By utilising formal and publicly available administrative documents, the change process was described and analysed based on the recorded data, which can be verified.

These limitations of the study do not, however, diminish the value of the new knowledge on the characteristics of the multilevel micro–macro linkages and institutional work in higher education change. This single case study reveals interesting characteristics of multilevel institutional work needed to induce institutional reform and change in incumbent environments, such as in higher education, and describes the related transformation mechanisms and micro–macro linkages that have not been discussed in the prior higher education literature.

### Author Contributions

**Sari Stenvall-Virtanen:** conceptualisation – ideas; formulation of research goals and aims. Data curation – management activities to annotate (produce metadata) and maintain research data for initial use and later reuse. Formal analysis – application of qualitative and quantitative methods and techniques to analyse the data. Funding acquisition – acquisition of the financial support for the project leading to this publication. Investigation: data collection. Methodology – design of methodology; creation of models. Project administration – management and coordination responsibility for the research activity planning and execution. Visualisation – preparation, creation and/or presentation of the published work, specifically visualisation/data presentation: Sari Stenvall-Virtanen. Writing – original draft – preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation). Writing – review and editing – preparation, creation and/or presentation of the published work including pre- and post-publication stages. Supervision – oversight and leadership responsibility for the research: PhD Thesis supervisors, professor Saku Mäkinen, professor Anne Kovalainen and professor Ulpuukka Isopahkala-Bouret at the University of Turku.

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### Ethics Statement

This study follows the ethical guidelines established by the University of Turku, Finland ensuring that the research complies with the methods and principles endorsed by the scientific community and respects the basic principles of research integrity: reliability, honesty, respect and accountability (The European Code of Conduct for Research Integrity) throughout the whole research process.

### Conflicts of Interest

The author declares no conflicts of interest.

### Data Availability Statement

The author follows the basic data sharing policy. The data that support the findings of this study are available from the corresponding author upon reasonable request.

### Endnotes

<sup>1</sup> UTU has (2023) educational responsibilities in six engineering and technology fields: Information and communication technology, Biotechnology, Electrical engineering and automation, Industrial engineering and management, Mechanical engineering and Materials engineering.

<sup>2</sup> Before 2018 the name of the responsible faculty was the Faculty of Natural Science and Mathematics.

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TABLE A1 | The codebook.

Characteristics of institutional actions	Codes	Descriptions on codes	Examples on codes in the empirical data translated from Finnish to English
Type of Institutional work	Creating institutions	Institutional work aiming at creating institutions consists of actions that reflect openly political work in which actors reconstruct rules, property rights and boundaries that define access to different material resources; actions in which actors' belief systems are reconfigured and actions to alter meaning systems in an organisation. (Lawrence and Suddaby 2006)	
Forms of institutional work	Advocacy	The mobilisation of political and regulatory support through direct and deliberate techniques of social suasion. (Elsbach and Sutton 1992; Galvin 2002)  This work entails for example lobbying for resources, promoting agendas and proposing new or attacking existing legislation to redefine allocation of material resources or social and political capital needed to create new institutional structures and practices (Galvin 2002)	Applying for the extended educational responsibilities in the field of technology and engineering from the Ministry of Education and Culture. [Actor 3, 20.3.2017, r12]  Resource and recruitment calculation for the extension of the technology and engineering field at the university. [Actor 6, 25.2.2020, r174]
	Constructing normative networks	Constructing inter-organisational connections through which practices become normatively sanctioned and which from the relevant peer group with respect to compliance, monitoring and evaluation (Lawrence et al. 2002; Orsato et al. 2002)  Work focus on the normative structure of institutions. That is, they each attend to the roles, values and norms that underpin institutions, interaction that provide the foundation for new institutional formation (Lawrence and Suddaby 2006)	The universities agree on Scientia Aboensis collaboration, which brings together the research and teaching competencies in the field of engineering and technology and creates a unique regional cluster of excellence. [Actor 3, 28.10.2016, r4]  Agreement of cross-institutional studies in the field of Industrial Engineering and management between the University of Turku and the Åbo Akademi University. [Actor 4, 5.2.2021, r396]
	Defining	The construction of rule systems that confer status or identity, define boundaries of membership or create status hierarchies within a field (Fox-Wolfgramm et al. 1998; Meyer and Allen 1997; Lawrence 1999)  Work also includes, for example accreditation processes, creation of standards, certification of actors within a field (Guler et al. 2002)	Conducting a skill survey in collaboration with the Turku Chamber of Commerce to support the curriculum work especially in new fields of engineering [Actor 6, 25.10.2019, r114]  Working group meeting for the Strategic planning of the technology and engineering education at the University of Turku. [Actor 4, 9.9.2019, r91]
	Theorising	The development and specification of abstract categories and the elaboration of chains of cause and effect (Greenwood et al. 2002; Kitchener 2002; Orsato et al. 2002). Naming of new concepts, beliefs and practices so that they might become a part of the cognitive map of the field and support institutions (Lawrence and Suddaby 2006)	The extension of the technology and engineering education was considered important both in terms of the regional development and of the development of the university. [Actor 6, 3.3.2020, r187]  According to the students the structure of the new Faculty of Technology is clear but the structure of the Faculty of Science seems to be quite scattered. [Actor 5, 20.5.2020, r317]

(Continues)

TABLE A1 | (Continued)

Characteristics of institutional actions	Codes	Descriptions on codes	Examples on codes in the empirical data translated from Finnish to English
	Vesting	The creation of rule structures that confer property rights. Micro-processes of creating new actors and new field dynamics by changing the rules of market relations. The process of vesting involves some degree of sharing of coercive or regulatory authority (Russo 2001)	The signing of the Technology Campus Turku agreement. [Actor 2, 27.4.2018, r31] The working group nominates the planning groups to build the technology and engineering degree programmes according to the agreed timetable, joint module structure and guidelines. [Actor 6, 15.8.2019, r81]
	Maintaining institutions	Institutional work aimed at maintaining institutions involves activities that support, repair or recreate social mechanisms (e.g., norms and belief systems) that ensure compliance. (Lawrence and Suddaby 2006)	The Faculty proposes an increase in the number of degrees in the ICT field. [Actor 1, January 2016, r2] The Faculty Council proposes to the rector [...] that Doctor of Philosophy would be assigned as a full professor in computing. [Actor 1, 13.6.2019, r73] Renewing the Scientia Aboensis agreement between the University of Turku and Åbo Akademi University. [Actor 1, 23.10.2020, r347]
	Enabling work	Strategic actions as institutional work that creates enabling conditions for strategic agency and supports or enhances the institutional change (Leblebici et al. 1991)	Faculty Council discuss the fulfilment of the professor position in the field of embedded systems and robotics and agreed on the criteria. [Actor 1, 17.12.2018, r49] The student union discuss the needed minimum resources for the extension of the engineering education. [Actor 5, September 2019, r85]
	Embedding and Routinising	Whereas, valourising and demonising provide discursive resources, this category of institutional work involves actively infusing the normative foundations of an institution into the participants' day-to-day routines and organisational practices. Embedded routines and repetitive practices such as training, hiring and certification routines and ceremonies of celebration (Townley 1997; Zilber 2002)	Mystery Shopper process to evaluate the quality of the degree education in randomly selected courses. [Actor 5, 25.3.2019–19.4.2019, r55] Discussion of the Mystery Shopper process' results and findings [Actor 4, 20.4.2019, r56]
	Policing	Institutional work that ensures compliance through enforcement, auditing and monitoring. Policing can involve the use of both sanctions and inducements (Fox-Wolfgramm et al. 1998; Schuler 1996; Holm 1995; Townley 2002)	Conducting a survey among the staff and students on their opinions, concerns and questions concerning the current organisation of the engineering and technology research and education at the university. [Actor 6, December 2019, r127] The students commented that they are pleased with the current practices to discuss the changes together with the new faculty. [Actor 5, 5.2.2020, r180]
	Valourising and Demonising	Discursive resources providing positive and especially negative examples that illustrate the normative foundations of an institution. Institutional work in which actors identify and evaluate the moral status of participants in the field, both as an enactment of institutionalised beliefs and as a way of maintaining the power of those beliefs (Angus 1993)	(Continues)

TABLE A1 | (Continued)

Characteristics of institutional actions	Codes	Descriptions on codes	Examples on codes in the empirical data translated from Finnish to English
	Altering, changing, destroying institutions	Coercive work aimed at altering, changing and destroying institutions involves deinstitutionalisation, for example, defining and redefining sets of concepts (Suchman 1995) reconstitution of actors and reconfiguration of relationships between actors (Greenwood and Hinings 1996; Lawrence 2004; Lawrence and Suddaby 2006)	The student guilds in Hybrid organisation states that discussion with the students has been weak and communication about the process inadequate. [Actor 5, 17.3.2020, r227]
	Disabling	Strategic actions as institutional work that creates disabling conditions for strategic agency and hinders or negatively slows down the change process (Floyd and Woolridge 1992)	The University Board did not make a decision but postponed the decision-making [about the new degree programme in Food Engineering] to the August meeting. [Actor 3, 6.6.2023, r497]
	Dissociating moral foundations	Institutional work that disassociates the practice, rule or technology from its moral foundation as appropriate within a specific cultural context. Gradually undermining the moral foundations of institutions, rather than their wholesale turnover (Ahmadjian and Robinson 2001)	In the group discussions, it was stated by many that the working in the pedagogical planning groups should be more effective. [Actor 6, 3.3.2020, r200]
	Undermining assumptions and beliefs	Work that decrease the perceived risks of innovation and differentiation by undermining core assumptions and beliefs. Work that breaks existing institutional assumptions and gradual undermining through contrary practices (Leblebici et al. 1991; Wicks 2001; W. R. Scott 2001)	Restructuring of the module of the engineering mathematics courses. [Actor 7, Autumn 2022, r457] The students do not support the establishment of the new degree programme in Food Engineering. [Actor 5, 27.4.2023, r488]
Behavioural influence	Upward	Upward actions affect management's view of organisational circumstances and the alternative strategies (Floyd and Woolridge 1992)	The Department proposes [to the University Board] a new international degree programme and presents the reasoning behind the proposal. [Actor 1, 9.11.2017, r17] The separate working group for organisational structures conducts a SWOT analysis on different Faculty alternatives. [Actor 6, 14.11.2019, r121]
Downward	Downward actions affect the operational level and the alignment of organisational arrangements within a specific context. (Floyd and Woolridge 1992)	The rights to approve minor subjects and individual courses and changes on their implementation is delegated to the vice dean responsible for basic degree education. [Actor 1, 24.4.2018, r32] In January 2020, the rector invited all Faculty deans to discuss the possibility of establishing a new Faculty. [Actor, 2, January 2020, r158]	

(Continues)

TABLE A1 | (Continued)

Characteristics of institutional actions	Codes	Descriptions on codes	Examples on codes in the empirical data translated from Finnish to English
Innovativeness	Incremental	Actions that concern gradual improvement of existing processes, operations, structures etc. (Chesbrough and Appleyard 2007)	The University Board decides to close down the Turku Centre for Computer Science (TUCS) as a separate department and moves the operations to the Faculty from 1.1.2019 onwards. [Actor 3, 26.10.2018, r44] The proposal to the Faculty Council of establishing a professorship in Knowledge Management. [Actor 1, 23.1.2019, r53]
	Disruptive	Actions that change the logics of processes, operations, structures etc. (Chesbrough and Appleyard 2007)	The rector proposes to the Ministry of Education and Culture to change the educational responsibilities of the UTU. [Actor 2, 12.6.2019, r72] The University Board decides to establish a Faculty of Technology to the UTU. [Actor 3, 20.3.2020, r228]
Institutional pillars	Regulative	Regulative actions concern regulation and emphasise conformity to formal rules, requirements and regulative processes (based on a law, decree or other kind of institutional regulation). Regulative actions be aimed at building and creating new regulation, formal rules, requirements or regulative processes (Scott 2014)	The University Board proposes to the Ministry of Education and Culture that the Decree on Universities' educational responsibilities would be changes so that Mechanical Engineering and Materials Engineering was added to UTU's responsibilities. [Actor 3, 17.3.2017, r11] The Agreement on Health Engineering education between UTU and TUAS is signed. [Actor 7, 22.6.2022, r451]
	Normative	Normative actions refer to actions that concern common ways of acting and behaving and stress a deeper moral base for assessing legitimacy, are based on normative mutually reinforcing rules, values and norms or create new ones (Scott 2014, 1995)	The working group assigns field specific planning groups to design the engineering degrees, steers this work and reports the proceedings of the work to the Rector. [Actor 6, 15.8.2019, r81] The process of the extension of the engineering education is presented to the University Board and questions are addressed. [Actor 2, 4.3.2020, r223]
	Cultural-Cognitive	Cultural-cognitive actions build on the common (socially mediated) cognitive framework for meaning and behaviour and previously learned taken-for-granted options. Actions craft constructions of mental models and shared world views, categorisations and cause-and-effect schemata (Scott 2014, 1995)	The Steering Board of the Faculty of Science and Engineering has stated to consider the extension of the current Faculty better than establishing a new Faculty. [Actor 1, 11.2.2020, r166] Arguments against the establishment of new Faculties were for example the following: Establishment of separate new units is considered to hinder collaboration and integration of the engineering education in to the university. [Actor 1, 3.3.2020, r216]

## Appendix B

TABLE B1 | Key actors in the institutional change process at the University of Turku.

Actor	Description	Actor reference number
The Old Faculty	In the analysis, the meaning of the old faculty differs in different phases of the process due to the organisational development and changes at the University of Turku. Before 2018, the 'old faculty' is used to refer to the Faculty of Mathematics and Natural Sciences, which at the time was responsible for conducting research and education in the field of engineering and technology. In the beginning of 2018, the name of the faculty was changed to the Faculty of Science and Engineering. In the analysis the name 'old faculty' is used interchangeably to refer both of these former faculties, which were responsible for the engineering and technology education before the new faculty was established (2021)	1
Rectors of the University of Turku	Kalervo Väänänen (Rector) 8/2016–7/2020 Jukka Kola (Rector) 8/2020–12/2023 Actions by the University as the employer and by the vice-rector for partnerships and strategic engagement were coded into this category.	2
Board of the University of Turku	<i>The Board of the University of Turku</i> is the highest decision-making body at the university. As a result of the 2010 University Act, the role of external members in Finnish universities has increased. At least 40% of the Board members at the universities subject to public law must be external. At UTU, there are 10 members in the Board and the board is chaired by Ritva Viljanen, who also has acted as the mayor of Vantaa in 2017–2023. Other members of the board represents external stakeholders, professors, other staff members and students	3
Technology Campus Turku	<i>Technology Campus Turku</i> is a network established in Spring 2018 to enhance the development of the technological ecosystem in Turku. The Technology Campus Turku was steered by the board of Turku Science Park (currently Business Turku) and a steering group, which has members from higher education institutions in Turku, the City of Turku and the Turku Science Park through which also the business sector is represented in the group. The Technology Campus Turku is led by professor Mika Hannula, who started the job in 2018 and who in 2020, also became the vice-rector (partnerships and strategic engagement) of the University of Turku. The basic operations of the campus are driven by education manager, research manager and communication manager, who all have permanent positions in some of the Technology Campus Turku partner organisations	4
Students of the University of Turku	<i>Students</i> in the analysis represent the students in the Student Union and students in the guilds of the responsible faculty for the engineering education. Before 2021, the responsible Faculty was the Faculty of Science and Engineering (2018–2020), which former name had been the Faculty of Mathematics and Natural Sciences (before 2018)	5
Working group for the overall planning (2019) and advisory group for the technology and engineering education extension (2020) at the University of Turku	The first working group was appointed for a certain time period (8–12, 2019) by the Rector of the University of Turku. Operational work in this group was led by the leader of the Technology Campus Turku and later also the vice-rector of the university. Members of the working groups represented both university administration, responsible faculty for the engineering education and other faculties at the university, collaboration universities; business sector and students The advisory group was appointed for a certain time period (1–12, 2020) by the Rector of the University of Turku. Operational work in this group was led by the leader of the Technology Campus Turku and later also the vice-rector of the university. Members of the working group represented both university administration, responsible faculty for the engineering education and other faculties at the university, business sector and students	6
The New Faculty of Technology	In March 2020, the Board of the University of Turku made a decision of dividing the existing faculty (Faculty of Science and Engineering) into two separate faculties resulting to the new <i>Faculty of Technology</i> and <i>Faculty of Science</i> in the beginning of 2021. The New Faculty became a new institutional actor at the university. The old faculty of Science and Engineering is referred as actor 1	7
Other Faculties and units at the University of Turku	The other faculties and units were engaged in the change process and were for example consulted in the administrative processes and faculty development along the process inside a multidisciplinary university of Turku	8

TABLE C1 | Frequency table on the multilevel strategic actions and their characteristics.

	Actor	Count of										Cultural-Cognitive		
		Action	Enabling	Disabling	Downward	Upward	Disruptive	Incremental	Creating	Maintaining	Changing		Regulative	Normative
2016														
Initial change	1	2	2	1	1	1	2	1	1	1	1	1	1	1
	2	2	2	1	1	2	2	2	2	2	2	2	2	2
	3	3	3	2	1	3	3	1	2	2	3	3	3	3
Total	7	7	7	3	4	0	7	2	5	0	6	1	1	0
2017														
Initial change	1	12	12	7	5	12	12	5	7	12	12	7	12	12
	3	3	3	1	2	2	1	1	1	2	3	1	2	3
Total	15	15	15	8	7	2	13	7	8	0	15	8	0	0
2018														
Initial change	1	17	17	10	7	1	16	10	7	16	16	7	16	16
	2	2	2	2	2	2	4	2	2	2	2	2	2	2
	3	4	4	3	1	4	4	2	2	4	4	2	4	4
	4	4	4	3	1	3	1	1	1	3	3	1	3	3
Total	27	27	27	16	11	6	21	18	9	0	25	9	0	0
2019														
Mobilisation of actors and collective actions	1	21	20	1	12	1	21	9	12	21	14	12	14	7
	2	5	5	3	2	2	3	3	3	2	3	3	3	2
	3	9	9	5	4	1	8	8	8	1	8	1	8	1
	4	1	1	1	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1	1	1	1
	6	55	55	34	21	3	52	52	52	2	1	1	1	54
Total	92	91	91	52	40	6	86	77	15	0	26	15	0	66

(Continues)



TABLE C1 | (Continued)

Actor	Count of										Cultural-Cognitive	
	Action	Enabling	Disabling	Downward	Upward	Disruptive	Incremental	Creating	Maintaining	Changing		Regulative
7	15	15	10	5	2	2	13	11	1	3	5	10
8	2	2	2	2	2	2	2	2	2	2	2	2
Total	29	29	20	9	3	3	26	25	3	1	8	21
2023												
New institutional structure	1	1	1	1	1	1	1	1	1	1	1	1
3	18	17	1	9	9	9	18	15	2	1	6	12
4	3	3	3	3	3	3	3	3	3	3	3	3
5	5	3	2	3	2	2	5	3	3	2	1	4
7	26	26	18	8	8	8	26	26	3	2	1	26
8	1	1	1	1	1	1	1	1	1	1	1	1
Total	54	51	31	23	0	0	54	49	2	3	7	47
Grand Total	523	507	321	202	24	24	499	447	65	11	152	278
Total												
												93

**TABLE C2** | Frequency table on strategic actions by different types of institutional work.

Actor	Count of action	Creating institutions				Maintaining institutions				Changing institutions		
		Advocacy	Constructing normative networks	Defining	Theorising	Vesting	Enabling work	Embedding and Routinising	Policing	Valourising and Demonising	Undermining assumptions and beliefs	Dissociating moral foundations
<b>2016</b>												
Initial change	1	2		1		1						
	2	2					2					
	3	3	1		2							
Total	7	0	1	1	0	0	5	0	0	0	0	0
<b>2017</b>												
Initial change	1	12	5			7						
	3	3	2		1							
Total	15	7	0	0	0	8	0	0	0	0	0	0
<b>2018</b>												
Initial change	1	17	8	2		5	2					
	2	2			2							
	3	4	2			2						
	4	4			4							
Total	27	10	0	2	0	6	2	2	0	0	0	0
<b>2019</b>												
Mobilisation of actors and collective actions	1	21	2	5	2	7	5					
	2	5	2		3							
	3	9	6	3								
	4	1						1				
	5	1					1					
	6	55	28	23	3						1	
Total	92	38	0	31	8	7	6	1	1	0	0	0

(Continues)

TABLE C2 | (Continued)

Actor	Count of action	Creating institutions					Maintaining institutions				Changing institutions		
		Advocacy	Constructing normative networks	Defining	Theorising	Vesting	Enabling work	Embedding and Routinising	Policing	Valourising and Demonising	Undermining assumptions and beliefs	Dissociating moral foundations	
2020													
Mobilisation of actors and collective actions	1	57	16	16	8	8	2	1	13	1			
	2	23	13	4	4	1	1						
	3	16	12	1		3							
	4	4	1	1	1		1						
	5	26	3	1	11				11				
	6	88	15	2	23	42					5	1	
	7	5		2	3								
	8	18	1			17							
Total		237	61	5	48	83	4	1	24	6	1		
2021													
New institutional structure	2	7	1	5	1								
	3	9	7	1			1						
	4	13		10	1	1	1						
	5	6	1			5							
	7	27	8	3	15	1							
Total		62	17	18	18	7	0	0	0	0	0	0	
2022													
New institutional structure	1	1	1										
	2	1	1										
	3	6	4		1		1						
	4	1											

(Continues)

TABLE C2 | (Continued)

Actor	Count of action	Creating institutions					Maintaining institutions			Changing institutions	
		Advocacy	Constructing normative networks	Defining	Theorising	Vesting	Enabling work	Embedding and Routinising	Policing	Valourising and Demonising	Undermining assumptions and beliefs
5	3	2			1						
7	15	4	2	7		1				1	
8	2					2					
Total	29	12	2	8	1	0	5	0	0	1	0
2023											
New institutional structure	2	1									
3	18	7	1	6	1	2				1	
4	3	2	1								
5	5	2		1						2	
7	26	17		9							
8	1	1									
Total	54	30	2	16	1	0	2	0	0	3	0
Grand Total	523	175	28	124	92	18	40	9	1	10	1
Total											