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Chapter 9

Technical Identity in a Merger Process—Between a Rock and a Hard Place



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9.1 Introduction

This chapter studies how the identity of a single-faculty technical university is represented and reframed in the context of a merger process with a multi-disciplinary, comprehensive university that focuses on the social sciences and a professionally oriented university of applied sciences. In particular, we study how the identity of the technical university is formed in relation to the other higher education institutions taking part in the merger and in relation to the identities of different technical disciplines within the organisation. We focus on the organisational identity of the technical university, as the academics and managers within the organisation perceive it.

Empirically, our study focuses on the merger process between two Finnish universities, namely the University of Tampere (UTa) and Tampere University of Technology (TUT), and one polytechnic, Tampere University of Applied Sciences (TAMK). Through the merger, a new university is formed that in turn will own the university of applied sciences.

The analysis is based on nine thematic interviews of selected professors and academic managers at TUT who have been actively involved in the merger process. Our research questions are: how the academic leaders and high-level managers represent TUT as a technical university in contrast to the other types of institutions involved in the merger and how they see the merger affecting the technical identity. In the analysis, we look at the main attributes associated with TUT and whether they

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coincide with those associated with technical universities as an organisational identity category in general. This chapter addresses the lack of research on the organisational identity of technical universities, particularly in Finland. This merger context is also especially interesting because it involves institutions from both sectors of the higher education system, namely research universities and universities of applied sciences.

9.2 History of Higher Education in Tampere

In Finland, the first technical institute established in Tampere in 1911, remained the only one until the establishment of the institutes in Turku and Helsinki in 1943. During the 1910s and 1920s, the number of students in technical institutes remained small, and the operation, studies and programmes were centrally regulated by the Ministry of Trade and Industry. Because of growing demand in the industry, new programmes in technical fields were established in the 1930s, and the number of students increased until World War II curbed this growth. After the war, the number of technical students rose, and new institutions were established around the country in the 1960s. In the mid-1990s institutes were merged and transformed into polytechnical institution. In 1996 the Tampere Polytechnic Institute, together with forestry, art and communication and business institutes, formed the Tampere University of Applied Sciences (Talvitie 1962; Valovirta 1986; see also Sotarauta et al. 2017; Ortega-Colomer et al. 2017).¹

Tampere was also one of the beneficiaries of the regional expansion of the Finnish higher education system in the 1960s. The Societal Institution of Higher Education (later University of Tampere) was transferred from Helsinki to Tampere, and in 1965, a branch campus of the Technical University (of Helsinki) was established in Tampere with a statute from the Ministry of Trade and Industry. This institution was the predecessor of Tampere University of Technology. The development in Helsinki and Tampere was thus different as the two technical institutions evolved into new institution of different educational sectors: the technical institute in Tampere became the Tampere University of Applied Sciences and the branch of the technical institute in Helsinki became Tampere University of Technology. In 1972, the branch campus gained its independence by an act of parliament and started its operations under the auspices of the Ministry of Education. The newly established technical university took a role as an active regional and societal actor by emphasising further education and product development as two strategic goals. It was given a mission to ‘provide highest education in technology and architecture, carry out scientific research and product development in addition to the other technological advancement’ (cf. Häikiö 2015; Ortega-Colomer et al. 2017).

¹For more detailed summary of the development based on documented history of technical education in Tampere, see Ortega-Colomer et al. (2017).

Since 2010, Tampere University of Technology, TUT operated as a foundation, an identity which differs from universities operating as public entities, and fits well with TUT's principles of industry-related cooperation and fee-based research. When established, the TUT Foundation raised a capital of € 137 million, which consisted of private investments² of € 40 million, and state investment of almost € 100 million. The proceeds of the foundation capital have also made it possible for the university to invest both in research and teaching, especially in new learning environments and the development of its quality and operations management.

9.3 Higher Education Mergers in Finland

The higher education system in Finland was expanded and regionalised when the universities of applied sciences were established in the 1990s. Already some two decades later, because of a demographic shift, there is a need to decrease the number of higher education institutions. In addition, larger institutions are seen as more competitive and more likely to reach a higher level of regional and international impact. Following this, several mergers have been implemented in Finnish higher education since the mid-2000s (Aarrevaara and Dobson 2016; Ursin 2017), and the trend continues. This 'structural development of the Finnish higher education system,' was ministry driven, except for Aalto University (Ursin 2017, p. 308), and has been limited within the sectors of the binary-system, so that universities of applied sciences have merged with universities of applied sciences and universities with universities. Currently, mergers initiated by the institutions themselves are challenging the boundary between the two sectors. Although the ministry supports mergers, the dual system and different roles of the universities and universities of applied sciences have still been emphasised in the ministry's resolutions. The plans involving both universities and universities of applied sciences have spurred a need to change legislation restricting the possibility to buy parts of the teaching from another institution. In late 2017, a law was passed to facilitate teaching cooperation between the two sectors, so that universities could, for example, buy teaching from universities of applied sciences even though the legislation governing the degrees remains separate, and the responsibility of the content of the degree is on the institution conferring it.

From the point of view of mergers that involve technical education, the creation of Aalto University in 2010 set the standard. When Aalto was formed, it also became a foundation university, as allowed by a new universities act in 2009. Aalto University was modelled as an innovation university with a strategically new and

²The main investors were Technology Industries of Finland the lobbying organisation for technology industry companies, Academic Engineers and Architects in Finland TEK, the trade union for highly educated professionals in technical fields., Tampere Chamber of Commerce and the Åkerlund Foundation, which focuses on supporting the development of expertise and education in the field of media.

interdisciplinary approach to technology, design and economics (Tienari et al. 2016, p. 25). The merger was initiated from within and strongly supported by industry. The government also invested a significant amount of fresh money into the new university.

Now, Aalto is known nationally and internationally and has created a brand. Despite this, as Aarrevaara and Dobson (2016) argue, it has not reached the world-class expectations placed on it. Organisationally, in Aalto University, there were three schools initially, and six from 2011 onwards, which have remained quite autonomous with many decisions being made on school-level. Thus, there are relatively few university-level regulations and practices (Tienari et al. 2016). Although Aalto has not quite reached all the goals set for it in the merger, it remains the main competitor of post-merger Tampere University in the field of technical education and research within Finland.

According to Tienari et al. (2016), the 'main integrative mechanisms deployed in the Aalto University merger in 2005–2011 included crafting a bold and forward-looking strategy, introducing a new common university brand, and developing a new tenure track career system for academic faculty'. Some of these aspects, such as the tenure track system, have been adopted by other universities, including TUT. The foundation model piloted by Aalto and TUT was chosen as the organisational form for the new Tampere University.

9.4 Tampere3 –Merger Process

The Tampere3 merger is constituted of two aspects. First, the merger of the two universities. Second, the creation of a university consortium where the Tampere University owns the majority of the stocks of the Tampere University of Applied Sciences (TAMK). The Tampere3 process began as a voluntary merger with strong support from the Ministry of Education and Culture. The initial idea is attributed to the former presidents of the two universities. However, already at an early stage, there were political tensions about the effects of this merger on the dual system of Finnish higher education. This has become a national higher education policy issue rather than a threshold question for the merging institutions.

The three higher education institutions have developed shared teaching in certain overlapping fields (such as biomedicine, civil engineering and sustainable development, to name a few), but the university and polytechnic degrees must be issued by the university and university of applied sciences, respectively. Because of this, the new merged university and the university of applied sciences will remain organisationally separate entities. This has also caused some perceptions that the functions and administration of TAMK would remain almost unchanged within the university consortium. As a part of the increasing level of cooperation in Tampere3, teaching in each higher education institution has been opened up to the students of the other institutions as cross-institutional studies. This means that the students of all three institutions may take optional studies from the offering of the two other institutions.

As part of the curriculum planning process of all three higher education institutions, more shared and complementary skills and knowledge are discovered and defined together so that teaching of programmes will be offered more and more together in the future. These changes challenge the educational separateness of the polytechnic and university degrees.

Although Tampere3 is said to build on the existing strengths of the three higher education institutions, certain focus areas are emphasised, whereas others are not. The education and research visions of Tampere3 indicate that it expected to become ‘the most significant undertaking to reshape the higher education landscape in Finland to date’ and ‘provide a unique hub for the interdisciplinary research on the economy, technology, health and society’ (Tampere 3 web page). Even with these pronounced profile areas, there have been worries within TUT regarding the future of the role of technology in the new university compared with how technical education and research have been undertaken in TUT so far.

In addition to the changes in the organisational structure, education, institutional profiling and vision statements, there will be a change in the organisational culture and values. We approach the issue from the perspective of organisational identity. The experiences of university mergers elsewhere have suggested that the key to a successful merger lies in human factors (Eastman and Lang 2001; Cai and Yang 2016); mergers are always associated with a mixing and changing of people’s values and cultures. Thus, the implementation of a merger can be understood as a process of institutionalising a new set of organisational values (Cai et al. 2016). Mergers have been seen as one tool for increasing interdisciplinary higher education and the overall efficiency and international competitiveness of the system, which are seen as significant to both institutional and academic identity.

Forming a large multi-disciplinary, comprehensive university brings about changes to organisational identities and cultures that are based on disciplinary divisions. In addition, a new division of labour in higher education is simultaneously challenging the traditional discipline-based academic identities as the one and only source of academic identity. In relation to disciplines, we reflect on how the different technical sub-fields at the technical university affect these representations of organisational identity from a disciplinary perspective. In order to study the formation of an organisational identity, we need to take a closer look at organisational identity as a concept.

9.5 Organisational Identity in a Merger Process

We are interested in identity as a collective social concept, where being a member of a group is key to a shared organisational identity. The identity of the group ‘us’ is defined in relation to others, and identity is built through social inclusion and exclusion. There are many theoretical attempts to describe this duality of identity or belonging. The distinction between friends and enemies has been used as a starting point for analysing any collective identity formation in political science (Schmitt

1927). The difference between 'us' and 'them' as the most significant segregation between groups of humans has been further elaborated by Bauman (2004), who shows that the difference is not referring just between two different groups of people, but rather between two totally different kinds of attitudes: trust and distrust, security and insecurity or cooperation and combativeness. 'Us' refers to a group of people that one belongs to; one would feel safe and secure in this group, feel at home and understand what is happening. Whereas, the 'other' represents the group in which one does not or cannot belong. From this point of view, understanding of the other group is diffuse and limited, and their behaviour appears unpredictable or even frightening (Bauman 2004).

The categories of 'us' and 'them' need each other to exist. The two polarities complete each other, and they exist because of that juxtaposition: this is the term of their existence. In both groups, identity is based on that polarity; the 'outsiders' are the force that 'insiders' need to build their identity and its coherence and solidarity (Bauman 2004). 'We' and 'they' are also formed through dichotomies where the other often receives negative connotations and through which a group can represent itself in a positive way. This way of using difference for identity construction is, to some extent, an oversimplification, ignoring any continuities and discontinuities between the opposites. Thus, it is possible to associate positive aspects to the other and negative to the self, respectively.

Although the differentiation between 'us' and 'them' is the analytical starting point, it should not be forgotten that this identity is a constructed representation evoked in the current study's interviews when asking for definitions of identity. This representation of 'we/them' regarding the technical identity is now brought about in contrast to other academic and organisational identities. Organisational identity differs from the individuals' personal identity because it is closely connected to the organisation's perceived properties and the collective of the members of the organisation. When analysing organisational identity, the organisation or members of the organisation constitute the collective identity, 'we'. The characteristics that particularly set the organisation as different from other (similar) organisations are defined as distinctive (Albert and Whetten 1985). These distinctive aspects of differentiation are the ones we are interested in regarding the representation of the identity of TUT as 'we'.

The organisational identity and image of universities have often appeared in higher education literature (see Stensaker 2015 for an overview), but few studies deal with the organisational identity of universities in the context of university mergers. Tienari et al. (2015, p. 4) studied the Aalto merger and the formation of identity of 'individuals and groups rather than the organization as a whole'. Another contribution to organisational identity in university mergers is Yuzhuo Cai's doctoral thesis on mergers in Chinese higher education (Cai 2007). In the following, we look at previous research in this area, which is mainly based on Cai's dissertation.

In organisational studies, the concepts of organisational identity and organisational image are interrelated and sometimes even used interchangeably. This approach has also been adopted in some organisational merger studies (Daniel and Metcalf 2001, p. 27). The definitions of the concepts are varied and should therefore

be differentiated. Identity primarily refers to the internal perception of ‘us’ in the organisation, whereas image is related to the external perceptions of how others view the organisation or what is presented to them.

Organisational identity as an analytical concept was first introduced by Albert and Whetten, who state that the characteristics associated with organisational identity are ‘central, distinctive and continuous over time’ (Albert and Whetten 1985). Organisational identity is the self-definition of the members of the organisation or their understanding of themselves (Whetten 2006), which may be based on different aspects of the organisation, such as its history or function. Thus, the elements constituting organisational identity may be teased out by asking the members of the organisation to define who they are as an organisation. Organisational history, or ‘saga’, is a ‘collective understanding of unique accomplishment in a formally established group’, where history also maps the direction for the organisation’s future (Clark 1972). According to Zundel et al. (2016), history is seen as a fundamental resource for establishing or maintaining organisational identity, which may be used to ‘induce coherence in times of crisis, uncertainty and challenge’. Thus, history may have particular relevance to organisational identity when a merger brings about change and when the old organisational identity will be reflected on in anticipation of a new emerging (possible) identity. From this point of view, it is interesting to see how members of TUT describe the organisational identity of TUT when it is being challenged by the merger with higher education institutions that are inscribed with both similar and different characteristics.

Another aspect of organisational identity is defined through what the organisation does, or its function and task. This is often voiced in the organisation’s mission and more closely related to the environment and market it caters to (Tierney 1991). Appropriateness to external environment, or the process of conforming to the demands placed by external stakeholders on the organisation (DiMaggio and Powell 1983; Meyer and Rowan 1977), are crucial to the task of universities.

In the case of higher education institutions, the relationships with society, industry and the market, have relevance through the way they contribute to what is known as the third mission, which is especially crucial for technical universities. In general, higher education institutions develop both their self-perceptions and external images through the realisation of the third task. From a higher education policy perspective, this is also a function that confers legitimacy to the institutions’ actions. This concerns the values on external development of the organisation, such as the role of universities in society and the kinds of research, innovations and graduates the university should produce (Cai 2007).

As noted by Stensaker (2004, p. 24), ‘organizational identity is a social institution the organization adapts to.’ Thus, identity reflects the organisation’s conformity to appropriateness in its environment. Universities are affected by the external factors of governmental policies, which, for example, aim to enhance the university’s third mission or encourage mergers to create larger units and multidisciplinary education and research. On the other hand, the appropriateness may be derived from mimicking successful international or national higher education institutions and the aspects associated with the ideal of the technical entrepreneurial university. These

aspects of identity that are related to the role of the university vis-à-vis society are also aspects often described in the mission statement and vision of the university (Cai 2007).

Organisational image is seen as something projected and represented by internal organisation members toward others. Organisational image, although a concept more rarely used in higher education studies, has significance in the context of an institution's reputation, ranking and prestige, but also in external beliefs on what the university is like. The image of a higher education institution in the current study can be understood to be how the institution is perceived by outsiders, whether in academia or in society, and what characteristics are associated with it. Ivy (2001) studied universities' organisational image in relation to marketing and student recruitment, arguing that higher education institutions need a distinct image to be competitive in the market and attract students and external funding. Thus, for universities, the image that needs to be projected is that of perceived excellence (Ivy 2001, p. 277).

In higher education studies, organisational identity has been studied often in shifting landscapes, and one of the major findings has been that new identities are not needed in changing times, but rather, what is needed is the ability to re-change identity to align with new work domains (Clandin et al. 2009 cit. Billot and King 2015). Seeing identity as a 'fluid and unstable concept' allows it to adapt when needed (Gioia et al. 2000, p. 63). Organisational identity may be different in a relational context, depending on what it is compared with, but also on who defines it. The event of an upcoming merger is a fruitful time to analyse organisational identity because change invites 'a heightened sense of belonging to the merging organization' (Tienari et al. 2015, p. 4).

In the current study, organisational identity refers both to the internal identity and external image as they are perceived and represented by the academics and high-level managers of TUT. Here, internal identity refers to how the managers of TUT perceive the identity of TUT within TUT, whereas the external image relates to how TUT is represented to and perceived by others. In the interviews, the identity of TUT is constructed internally as a technical university in relation to its history and organisational saga and externally based on its reputation and image, function and relation to society and external stakeholders and what kind of research and graduates it produces. All these aspects are contrasted against the aspects of UTa and TAMK, respectively. There are also institutional layers and organisational complexity within TUT that affect the representation of its organisational identity.

9.6 Organisational Identity and Entrepreneurialism—The University–Industry Nexus

As stated in Chap. 1 in this volume, universities already have an institutionalised organisational identity and technical universities have a particular entrepreneurial identity, which can be contrasted with the ideal of the Humboldtian comprehensive university. Often, technical universities are seen as closely connected with their environment, stakeholders and industry.

For the last three decades, literature and policy practices have emphasised the importance of university–industry relations, the importance of the relevance of academic work and research and the role of universities in national and regional innovation systems (Gibbons et al. 1994; Etzkowitz and Leydesdorff 1997; Lundvall 1992; Edquist 2005). These aspects have had a major impact on the organisational identities and images of universities and technical universities especially. In policy discourse, labels such as ‘innovative universities’ or ‘entrepreneurial universities’ (see Clark 1998) often have a positive connotation when it comes to technical universities. The two main approaches toward the role of universities in innovation systems, or more specifically in regional development, are the following:

1. Generative role, that is, the role of an organisation in supporting regional development by providing the knowledge, training and services required to support regional actors, strategies and traditional university–industry links. The main aim of collaboration is the capitalisation of knowledge.
2. Developmental role, that is, the role of an active organisation in shaping the regional development by participating in knowledge production in different arenas and different ways. The aim of universities is not to capitalise the research and teaching outputs but rather to engage with society (third mission). (Gunasekara 2005)

These two categories are not exclusive but overlapping. A generative role is more exogenous, where universities produce knowledge and research that in turn is utilised by society, whereas, in the developmental role, universities are seen as an integral participant in regional development (Gunasekara 2005, p. 102).

The culture related to university–industry links has also had a major impact on the constellation of academic identity. “Jain et al. (2009) describe the identity work of individual academics in the context of the commercialisation of science, noting on the contrast of the traditional (Mertonian) academic and entrepreneurial role identity.” They emphasise that scholars who have engaged in active identity work have hybrid identities with relation to outreach (commercial) activities (Table 9.1).

From the perspective of individuals, both identities may exist simultaneously but require the tactics of ‘*delegating* and *buffering*’ to constitute ‘a hybrid role identity that comprises a focal academic self and a secondary commercial persona’ (Jain et al. 2009, p. 922). In reference to the institutional role, there may be similar challenges and a need to consolidate these conflicting roles of being a research-focused

Table 9.1 Academic and entrepreneurial role identities compared (Jain et al. 2009, p. 924)

	Academic	Entrepreneurial
Norms	Universalism Communism Disinterestedness Skepticism	Uniqueness Private property Passion Optimism
Processes	Experimentation Long-term orientation Individualistic/small groups	Focus Short-term orientation Team management
Outputs	Papers Peer recognition/status	Products Profits

university and an entrepreneurial university that is actively involved in technology transfer.

9.7 Engineering Identity

There is relatively little research on identities in the specific context of technical universities. However, there are many studies on the identity of engineering education as a newly emerging ‘discipline’, building its own identity (cf. Gardner and Willey 2016). One U.S. study on the engineering identity of faculty was found, providing a narrow (but deep) qualitative approach of a single case study (Pawley 2009). From her interview data, Pawley distinguishes three ‘universal’ homogenic narratives of engineering faculty identity. According to Pawley (2009), these narratives simultaneously model and construct ‘engineering’ for the faculty members themselves and for others within the disciplinary space of academia. The narratives are as follows (Pawley 2009):

1. Engineering as applied science and math. Engineering was contrasted to science and math and described as an obligatory passage point between science and society.
2. Engineering as solving problems. Engineering is solving real problems that might be received from outside the university. However, there is a difference between the work of academic engineers and actual applications and solutions.
3. Engineering as making things. Engineers, unlike science graduates, are making highly technical and mechanised products.

It seems that the applicability and relevance of the nature of engineering work of academics is the most significant constructing characteristic of engineering identity in academia. Engineering is also considered multidisciplinary in its approach to solving actual problems.

As such, engineering identity has been studied widely. To introduce the literature, we refer here to a systematic literature review by Morelock (2017). According to his mostly qualitative data, engineering identity research (published in

engineering education forums) has boomed. Most of the studies concern students in different school levels and higher education, as well as professional engineers. Engineering identity seems to be related to an academic background, profession, gender and engineering experiences. According to Morelock's (2017) analysis, eight aspects of engineering identity (of students) can be recognised:

1. Problem-solving ability
2. Technical knowledge in math and science
3. Creativity and innovation
4. Communication
5. Integrity and ethics
6. Positive social impact
7. Lifelong learning
8. Application of knowledge

When analysing the empirical data, we shall also see whether these aspects of engineering identity described above are present in the self-representation of the aspects of the organisational identity and technical disciplines of TUT and how these aspects are contrasted to the representations of UTa and TAMK as the 'other'.

9.8 Academic Identity

Academic identity in technical universities is constructed of two dimensions: education and research. Additionally, the institutional logics of engineering education consist of two professional logics, which are based on different assumptions, beliefs and values. The first one is the logic of the *engineering profession* based on the teachers' mission of educating the next generation of engineering professionals. Here, the emphasis in engineering education is to prepare students to work on practical issues, meaning they should be able to apply and integrate their theoretical knowledge in practice. The second logic is the *academic profession*, which is the logic of the academic educators, where the mission is more transferring the theory of their discipline; students should learn disciplinary theories and be prepared for a research career. The academic identity of the educators is strengthened by the fact that they all have PhD degrees in a technical discipline. These two logics—the engineering profession and the academic profession—constitute the dual nature of engineering education, which comprise a meaningful relationship because both sides are necessary. However, there are contradictions and tensions between the logics. Edström (2017, p. 75) gives an example: 'the capacity to teach disciplinary theory is strengthened by the academic logics while the professional logics create capacity for addressing also the other necessary aims for the curriculum'.

There is also a similar kind of tension in doing research at a technical university, making it challenging to form a researcher identity. Research can be considered a knowledge for its own sake, one that aims to further the discipline or to be useful in society. Therefore, the university can be considered as having two beliefs: the

university of academia, where the aim of the research is to further the discipline and the university as a public service, where the aim of the research is guided by consideration of use (Edström 2017, pp. 73–75). Consequently, the academic identity in technical universities involves aspects of research and teaching, as well as tensions between foundational academic science research versus applied research. In this sense, technical identity emphasises the relevance and practical applications of knowledge (Fig. 9.1).

Technical universities oscillate between scientific and practical orientation and between foundational sciences and applied sciences. Although engineering sciences are seen as a distinct discipline from the natural sciences, they are considered to be based on them. It may be questioned whether engineering sciences are only applied natural sciences or if they have their own methodologies and epistemological criteria (Hansson 2015, p. 20).

Another distinction between these disciplines is that the natural sciences are categorised as hard and pure sciences, and engineering sciences are defined as hard but applied (see also Becher and Trowler 2001), more professionally oriented and more oriented towards application and solution. In previous research, engineering identity is often related to student identity or professional identity, but not necessarily to institutional identity (Hansson 2007; Edström 2017; Myers et al. 2012; Tonso 2006).

Technical universities usually combine both natural sciences and engineering disciplines. According to the Government Decree on University Degrees, the degrees awarded at TUT are all in the field of engineering (technology), but the teaching responsibility includes also natural sciences (1439/2014).³ Technical universities may seem homogenous in their fields and disciplines from the outside, whereas internally, differences and disciplinary divisions are distinguished both within natural sciences and engineering sciences.

According to international comparisons, organisationally, many technical universities have separate science and engineering faculties to accommodate for the

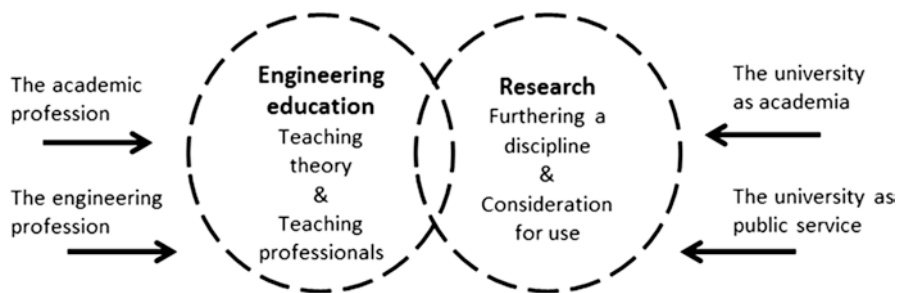


Fig. 9.1 The two logics of engineering education (Edström 2017, p. 77)

³‘Tampere University of Technology had responsibility for natural science education in fields specified in the Ministry of Education Decree. The degree title is, however, always one used in the field of Technology’ (1439/2014, p. 16).

differences between the foundational and applied sciences. However, the structure of TUT only partially complied to this distinction.

9.9 Data and Methods

With this case study, our assumption is that an organisational perception of the aspects of ‘technical’ and ‘academic’ are constructed in such a way that these two overcome the differences between the different fields of natural science and engineering and categories of staff. When depicting the technical university’s organisational identity, we approach identity formation from an organisational point of view and therefore chose to interview mostly senior academics who have been actively involved with the merger process. They are in a key position to reflect the identity of TUT and contrast it against those of UTa and TAMK. Summing up, we are more interested in internally converging identities than in diverging identities.

The empirical data for this chapter consist of nine interviews conducted at TUT between April and June 2017. The interviewees were professors, deans and the upper managers working in TUT. The interviews were conducted at TUT campus, except one that was done by phone. The interviewees were mostly people who had been working their whole career in a technical university or at least at some university with a technical faculty and many years at TUT afterwards. The interviewees were in the position that they had a good perception of the organisational identity and image of TUT and were involved in the construction of the organisational image.

The interviewees were asked to reflect on the differences and similarities of the merging organisations and present their views regarding the perceived threats and opportunities that the merger process posed regarding the technical identity. The anonymity of the interviewees has been secured by presenting more analysis of what they have said rather than direct quotes.

The interviews were analysed using qualitative methods by utilising a data triangulation method. One of the authors analysed the interviews by approaching them from the perspective of comparing TUT with UTa. The second author was doing the same data-driven analysis but approaching it from the perspective of comparing TUT with TAMK. The third author went through all the interviews and constructed an overall understanding of TUT’s organisational identity and image. As a result, the tables in the appendix and Figs. 9.2 and 9.3 were constructed to define how the identity of TUT was built within the interviews. The fourth author summed up the discussion in the context of the merger process. After an independent analysis, the other authors went through the findings, and finally, the four authors discussed the findings and wrote the conclusions.

Some of the differences between TUT and the other institutions are based on dichotomies where TUT is represented clearly as the positive norm and the other higher education institution as deviating from the norm. However, when some aspects of TUT are described without contrasting them to the other, it may be an over-interpretation to then see the other as implicitly the opposite; however, in some

instances, this may be implied. The representations of TAMK and UTa when contrasted to TUT are also based on the perceptions of academics at TUT and thus do not reflect the organisational self-images of TAMK and UTa, respectively. Comparing TUT with UTa and TAMK was approached from following perspectives:

- Organisational identity in a merger process (organisation)
- Organisational identity and ‘technical entrepreneurialism’ (university–industry nexus)
- Academic identity and the research-oriented technical university (academic, technical)
- Practical orientation and engineering identity (engineering)

If the academics at UTa or staff at TAMK had been interviewed with similar questions on organisational identity in contrast to the other two higher education institutions, the results would have been quite different. It should also be noted that the interviewees were asked about their identities in relation to research, teaching and organisation; thus, these are also the aspects they mostly describe when discussing TUT’s organisational identity.

It must be acknowledged, that the interviewees occasionally questioned the shared identity and unity of the organisation and said that there was internal variation and differences within TUT. Some of the dichotomies between TUT and the other institutions are alleviated by saying that these representations are based on stereotypes or over-simplifications. In some interviews, the interviewee distances him- or herself from TUT or from the natural scientific or engineering discipline when talking about the organisation or the discipline generally but saying that she or he represents an exception to this.

9.10 Organisational Identity of TUT Compared with UTa

At the beginning of the interview, the interviewees were asked how the disciplines at TUT differ from the corresponding disciplines at UTa and TAMK. The interviewees quite often started to answer this by relating to engineering identity as a discipline, thus representing the organisational identity of TUT as closely linked to engineering sciences. The identity of engineering sciences as an academic discipline and the professional identity of university-educated engineers (MSc in technology) is strong when contrasted against the representation of UTa as the other. Engineering identity is described quite precisely in the interviews, whereas the academic identity of UTa remains somewhat elusive although it is seen mostly based on social sciences and humanities. When considering its academic and disciplinary base, TUT has a shared foundation in mathematics and natural sciences, whereas the disciplines at UTa are diverse, and their foundations differ from one another. This difference between shared and diverse disciplinary foundations was an evident aspect brought up by all of the interviewed academics. There might be two reasons

for the clarity of the definition of engineering sciences as a discipline. First, this may be because the definition is asked from those representing the discipline themselves, and second, it may also be because engineering is a highly paradigmatic discipline. According to Gardner and Wiley, engineering ‘research is typically positivistic in outlook and dominated by quantitative methods’ and thus is seen as unified when contrasted with other less paradigmatic fields, such as education or social sciences, where there is little ‘agreement on appropriate research questions’ and ‘appropriate methodology’ (Gardner and Wiley 2018, p. 235).

Reflecting on the theoretical definitions of engineering identity, two of the three narratives of engineering identity described by Pawley (2009) are found in some form in all the interviews: ‘engineering as applied science using natural sciences and math’ and ‘solving problems for society’. One of the interviewees defined both narratives as follows: ‘...what is engineering? Well, it is problem solving. And there is a mathematical and natural sciences base, so it is problem solving through mathematical and natural sciences’. However, despite the aim of the research in technical universities to be useful in society, there is also the aim to further the discipline (Edström 2017, pp. 73–75). The emphasis between these two was different in TUT compared with UTa, which was seen as more theoretical in its research.

From the perspective of education, engineering discipline and the degree of Master of Science in Technology were the foci of identity definition. The degree is seen as being associated with a strong brand and having a good reputation among employers. Degrees at TUT included numerous mathematics and natural science courses, and this was seen as a strong basis for technical fields and something that should not be diluted; if the extent of these studies is diminished, the Master of Science degree’s reputation will be lost. Similarly, some of the core aspects Morelock (2017) identifies as part of engineering identity were found in the interviews. The most eminent aspect was that of ‘problem-solving ability’, but also the ‘applicability of knowledge’. Another strong aspect was ‘the shared scientific or educational basis of math and science’. Regarding creativity and innovation, two interviewees mentioned the latter as typical for the organisational identity of TUT and it was mentioned as a characteristic of teaching at TUT by one interviewee. In technical universities, the emphasis in engineering education is more on how to prepare students to work with practical issues and apply their knowledge in practice rather than teaching them disciplinary theories and preparing them for academic careers (Edström 2017, pp. 73–75). Additionally, this difference is seen as significant between these two universities.

The aspect of ‘communication’, which Morelock defines as more related to individual engineering identity, was mentioned in terms of organisational identity associated to TUT. Engineering identity was not referred to as communicating, but the organisation of TUT was seen as communicating; there was a low level of hierarchy, and communication between different levels of the organisation was both direct and efficient. In addition, ‘positive social impact’ was attributed to the close relationship TUT was described to have with society. This part of organisational identity is related closely to the university’s function and appropriateness to its environment, which is mentioned in the theoretical framework of organisational identity and

contributed to the representation of TUT as an entrepreneurial university. Two of the dimensions Morelock sees as distinctive for engineering: 'integrity and ethics' and 'lifelong learning' were not mentioned at all in the interviews.

One of the interviewed academics summed up that technical fields do not constitute a discipline, but rather, an applied field based on natural sciences where the dividing line between the different disciplines is artificial. These aspects of engineering identity depict the discipline, the education and the ensuing identities of the researchers and graduates as much more uniform than those of the researchers and graduates of the comprehensive university. In some of the interviews, the identity based on engineering sciences was somewhat questioned by representing TUT as multidisciplinary and creating a division between the foundational natural sciences and applied engineering sciences.

There were also organisational aspects that TUT and UTa share, which seemed to be mostly associated with the organisational identity of universities as organisations. TUT and UTa were both described as scientifically oriented and academic, but the differences in these two were highlighted in their external relations, that is, their contributions to science and society. TUT was seen as more entrepreneurial and industry-oriented: the impact to society came naturally from its close collaboration with companies in society, whereas UTa was somewhat aloof, analysing or trying to influence society from the outside and focusing more on basic research done inside the university. This reflects the developmental role in knowledge production and engaging with society associated with entrepreneurial universities (Gunasekara 2005). TUT was also represented as more internationally research oriented, and the research was done to solve real technical problems together with specific industry. Research done in UTa was defined as done for the sake of research itself, and if it had an external interest, it was mainly contributing to Finnish society.

When discussing the differences between TUT and UTa, the organisational identity of TUT was seen as being strong compared with the organisational identity of UTa. In its self-representation, TUT was an autonomous foundation university that was well-organised and professionally lead, whereas UTa was a state-governed university with internal discussions and inclusive aims for democracy, which lead to little unity in the organisation and a decentralised, weak leadership. Thus, it seems that in addition to the organisational identity aspects associated with technical universities in general, such as entrepreneurialism and engagement with society, the organisational aspects of TUT were complemented with the identity of a foundation university.

Based on our analysis, the organisational aspects that the interviewees used for identifying TUT compared with UTa were: (1) industry relation, (2) organisation, (3) relation to society, (4) discipline, (5) research, (6) motivation for research, (7) paradigm, (8) students/student union, (9) evaluation of results (in research), and (10) teaching/student selection. These aspects cover almost all aspects of academic work. The major differences are described in Table 9.2 in the appendix. By summing up these reflections, the major aspects of UTa were as follows:

- Variety of disciplines/multidisciplinarity, mainly social sciences and humanities

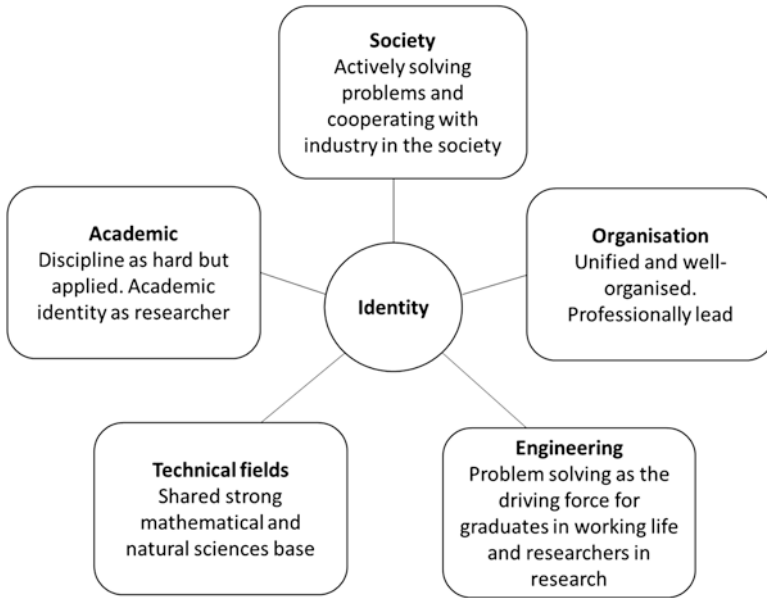


Fig. 9.2 Organisational identity of TUT when compared with UTa

- Finnish society and the public sector as stakeholders
- Research on and contributing to Finnish society
- Organisationally less organised

In comparison, the major aspects of TUT were the following:

- Shared disciplinary basis of mathematics and natural sciences
- Industry relations
- International science and research
- Organisationally well-organised with strong leadership

These aspects reflect quite well the disciplinary aspects of engineering sciences and the aspects associated with the entrepreneurial university. In addition, we see an association with international research compared with an association with research contributing to Finnish society as a distinctive characteristic of this particular case.

In Fig. 9.2, the major building blocks of the identity of TUT are described when compared with UTa.

9.11 Organisational Identity of TUT Compared with TAMK

When considering the academic and disciplinary base, TUT had a shared foundation in mathematics and the natural sciences in both research and education, whereas the disciplines at TAMK were considered more applied. The identity of engineering sciences and university-educated engineers (MSc in technology) was strong when contrasted against the representation of TAMK as the other, as the polytechnic degree was seen as a more practical, hands-on degree. The participants noted that after the merger, the best students from the polytechnic degree studies could be enrolled in academic engineering studies (BSc or MSc in technology), and university students who do not have academic ambitions could finalise their studies in the polytechnic. From the perspective of education, the degree of Master of Science in Technology was the focus of the identity definition. It was considered an academic degree providing generic problem-solving skills, not just professional competencies. Thus, the engineering identity aspects (Morelock 2017) were more associated with TUT than the TAMK degrees in engineering.

When discussing the differences between TUT and TAMK, the organisational identity did not play a significant role. The main dimension of differentiation came from the research intensiveness of TUT compared with the more applied and teaching-oriented TAMK. TUT took on the academic, even elite, university identity, but did not emphasise the entrepreneurial identity as much.

In the analysis we looked at the aspects of: (1) industry relation (2), organisation, (3) relation to society, (4) discipline, (5) research, (6) motivation for research (knowledge interest relevance), and (7) student selection and whether the interviewees used these for comparison between TUT and TAMK.

It must be acknowledged that the comparison was not as rich as it was with UTa. In addition, only one interviewee mentioned the organisational differences, and the relation to society was narrowed down to industry only, and the comparison of students was qualitatively different. Summing up the major differences (see Table 9.3 in the appendix) the major aspects of TAMK were the following:

- The importance of teaching (over research)
- Regionalism and professionalism with a service-orientation
- Lower academic quality of students
- Staff as workers

In comparison, the major aspects of TUT were the following:

- More abstract theoretical and methodological approach in teaching
- International science and research
- Planning and finding new solutions, not implementing and developing professional skills
- Elite academics

In certain aspects, TUT and TAMK were described to be equally important, different types of institutions but overall, the TUT identity was considered superior

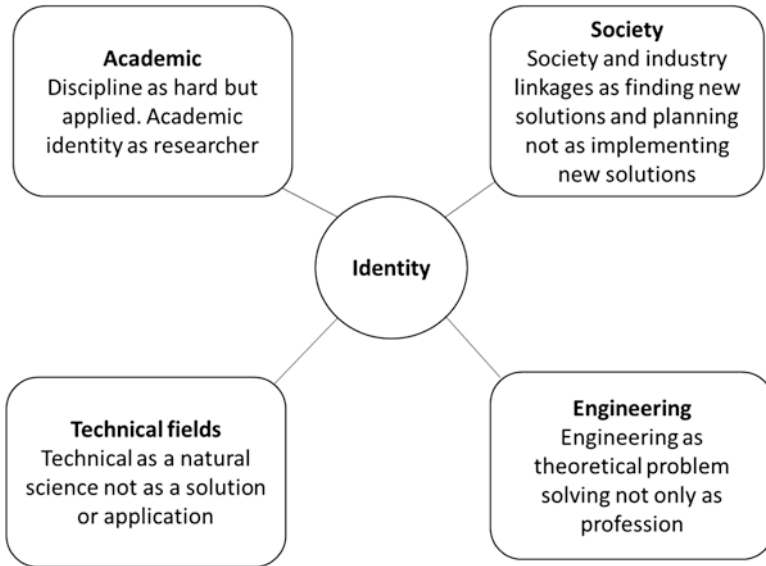


Fig. 9.3 Organisational identity of TUT when compared with TAMK

and more scientific. The major difference was seen in the main function of the institution (teaching vs. research). Yet the answers were not nuanced, and there was no major discussion on the organisational differences other than teaching versus research intensiveness. The research done at TAMK was considered applied and not as creative as what was done at TUT. The scientific natural sciences foundation, as represented particularly in the level of mathematics, was considered a significant characteristic in separating the teaching in these two institutions that otherwise were not considered that different. Figure 9.3 describes the major building blocks of the identity of TUT when contrasted against TAMK.

9.12 Conclusions

In this chapter, we have discussed how the identity of a technical university was challenged in the context of merging three Finnish higher education institutions. Despite the relatively long merger process and finding similar content in the teaching of the three institutions, the identity of the technical university was represented as quite strong and separate from the other two institutions and that of UTa in particular. The comparisons with TAMK seemed somewhat less important. This may be because TAMK is already categorised as an institution of a different type (poly-technic) and as serving a different purpose, that of a more practical orientation.

According to the nine interviews conducted at TUT, the most important dimensions of identity were engineering identity, scientific academic identity, technical

identity and relation to the wider society. Contrary to our assumptions, it seemed that the organisational identity was important for the identity of a technical university only when compared with a multidisciplinary university. Confrontation with UTa brought out TUT's strong shared basis on the natural sciences, impact on society, close collaboration with industry, solution-oriented thinking and strong organisational leadership. When comparing the identity of the technical university with TAMK, the interviewees from TUT emphasised their scientific academic identity, which is based more on research, not teaching. In addition, the Master of Science degree was emphasised as trusted among employers and as a degree with a special prestige.

In the merger process, TUT's position and its technical identity can be seen as between a rock and a hard place—neither UTa nor TAMK are providing a similar and attractive partnership for identification in the future that would provide more prestige than being a single-faculty technical university. However, many of the interviewees emphasised some new interesting opportunities for future collaboration after the merger although this collaboration was often mentioned with a research field with similar interests. Collaboration with TAMK would include more emphasis on the technical fields in the new higher education institution but at the same time focusing more on teaching and educating the professionals for a first-cycle degree. Collaboration with UTa would include a more academic aspect, but it would not bring more prestige to technical fields; however, it could be argued that multidisciplinary research is valued in the current research landscape, especially when it provides new perspectives in solving societal challenges. This is also the approach taken in the strategic plans concerning the Tampere merger. The positive views of the merger may be because the interviewees were all actively involved in the planning and implementation of the merger. Had we asked other members of TUT, the answer might have been completely different.

Organisational identity will change because of the merger, but how much will this affect the academic identity of TUT's current disciplines of natural sciences and engineering? At TUT, the academic identity seemed to converge to large extent with the university's organisational identity. It will take some time for the new organisational identity of Tampere University to emerge. It would be interesting to see some years after the merger what kind of technical identity is defined and represented within the new university and whether the aspects are similar as those represented in this research or if they have changed. It may also be possible that the natural sciences and engineering sciences find new identity categories and that their shared identity based on TUT's organisational identity will not carry over to the new merged university. It remains to be seen which aspects will still be associated only with the technical fields and which aspects of the technical university cannot be reconciled with the organisational identity of the new comprehensive university.

Appendix

Table 9.2 Summary of the interview findings comparing TUT and UTa

Term used by interviewed	TUT	UTa	Mentions (interview numbers)	Theoretical aspect
Industry relation	Close relation to industry Industry driven External funding	Non-existent, vague or loose relation to industry	1, 2, 3, 4, 5, 6, 7, 9	Society
Organisation	Well organised Leadership driven Linear organisation Unified Low hierarchy Openness Straight forward Open to change/efficient/agile Private foundation, autonomous Budget conscious/economic	Not organised No or little leadership Democratic, collegium Diverse Authoritarian Individual Defensive, old fashioned, stabile State bureau State-steered	1, 3, 4, 5, 6, 7, 8, 9	Organisation
Identity, culture	Technical Master of Science (Engineering) Engineering student Homogenous	Not named Master of Philosophy Heterogeneous	1, 4, 6, 9	Engineering
Relation to society	Part of society, working within and together Industry	‘Outside of society’ Trying to influence society Public sector	1, 2, 3, 4, 5, 7	Society
Discipline research	Science/natural sciences Mathematics Hard Applied Technical Engineering Research oriented	Social sciences Humanities Soft Basic Multidisciplinary Teaching oriented	1, 2, 4, 6, 8	Academic

(continued)

Table 9.2 (continued)

Term used by interviewed	TUT	UTa	Mentions (interview numbers)	Theoretical aspect
Motivation for research Paradigm	Solution driven, Solving real problems Building, innovation driven change driven Practically oriented Shared/common International Experimental, machine/laboratory Measurable objective results	Theoretically driven, Research for research sake problematising, critical Methodologically oriented Diverse/freedom to choose Domestic, local Theoretical Method Subjective results not evaluated as good or bad	1, 2, 4, 6, 8	Academic
Students/ student union	Not politicised Implicitly right wing? Good relation with students and the university	Politicised Leftist Hippies Overtly green values, 'tree huggers' Anarchist traits	4, 9	Organisation
Evaluation of results (in research)	Exact indicators, numbers on personal level	General indicators on school level	1	Organisation / Academic (research)
Teaching/ student selection	More pragmatic Demanding/more work compared to credits Number of applicants relevant Attractive programmes/ modern teaching methods	(implicitly) Traditional/ old-fashioned teaching methods	1, 4, 5, 6, 7, 8	Organisation / Academic

Table 9.3 Summary of the interview findings comparing TUT and TAMK

Term used by interviewed	TUT	TAMK	Mentions (interview number)	Theoretical aspect
Industry relation	Solutions/new knowledge	Application	5, 8	Society
Organisation	Closer to TAMK than UTA	More managerial	4	Organisation
Identity	Research (academic staff) Engineering, theoretical	Teaching (staff) Engineering, practical	1, 2, 5, 6, 7, 8, 9 4, 5, 7, 8	Engineering
Relation to society	Not mentioned	Relation to society narrowed down to industry only	5, 8	Society
Discipline research	International engineering science	Regional engineering profession	3, 7	Academic
Motivation for research Paradigm	Solution driven, theoretically driven, methodologically (natural science, mathematics) oriented Planning	Application-driven services, tailoring Implementation	1, 2, 3, 6, 8 3, 4, 6, 7	Academic
Student selection	Social ‘elite status’ Academic ethos Better students	Social ‘workers status’ Professional ethos More challenging students	8 4 3	Organisation/ Academic

References

Aarrevaara, T., & Dobson, I. R. (2016). Merger mania? The Finnish higher education experience. In R. Pinheiro, L. Geschwind, & T. Aarrevaara (Eds.), *Mergers in higher education. The experience from northern Europe* (pp. 59–73). Dordrecht: Springer.

Albert, S., & Whetten, D. A. (1985). Organizational identity. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 14, pp. 263–295). Greenwich: JAI.

Bauman, Z. (2004). *Identity: Conversations with Benedetto Vecchi*. Cambridge: Polity.

Becher, T., & Trowler, P. (2001). *Academic tribes and territories: Intellectual enquiry and the cultures of discipline*. Buckingham: SRHE and Open University Press.

Berg, P.-O. (1985). Organization change as a symbolic transformation process. In P. Frost, L. Moore, M. R. Louis, C. Lundberg, & J. Martin (Eds.), *Reframing organizational culture* (pp. 281–300). Beverly Hills: Sage.

Bernstein, D. (1984). *Company image and reality: A critique of corporate communications*. London: Holt, Rinehart and Winston.

Billot, J., & King, V. (2015). Understanding academic identity through metaphor. *Teaching in Higher Education*, 20(8), 833–844.

Cai, Y. (2007). *Academic staff integration in post-merger Chinese higher education institutions*. Tampere: Tampere University Press.

Cai, Y., & Yang, X. (2016). Mergers in Chinese higher education: Lessons for studies in a global context. *European Journal of Higher Education*, 6(1), 71–85.

- Cai, Y., Pinheiro, R., Geschwind, L., & Aarveaara, T. (2016). Towards a novel conceptual framework for understanding mergers in higher education. *European Journal of Higher Education*, 6(1), 7–24.
- Clandin, D., Downey, C., & Huber, J. (2009). Attending to changing landscapes: Shaping the interwoven identities of teachers and teacher educators. *Asia-Pacific Journal of Teacher Education*, 37(2), 141–154.
- Clark, B. R. (1972). The organizational saga in higher education. *Administrative Science Quarterly*, 17(2), 178–184.
- Daniel, T. A., & Metcalf, G. S. (2001). *The management of people in mergers and acquisitions*. Westport/London: Quorum Books.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality. *American Sociological Review*, 42(2), 147–160.
- Dutton, J. E., & Dukerich, J. M. (1991). Keeping an eye on the mirror: Image and identity in organisational adaptation. *Academy of Management Journal*, 34, 517–554.
- Eastman, J., & Lang, D. W. (2001). *Mergers in higher education: Lessons from theory and experience*. Toronto: University of Toronto.
- Edquist, C. (2005). Systems of innovation. Perspectives and challenges. In J. Fagerberg, D. Mowery, & R. Nelson (Eds.), *The Oxford handbook of innovation* (pp. 181–108). Oxford/New York: Oxford University Press.
- Edström, K. (2017). *Exploring the dual nature of engineering education. Opportunities and challenges in integrating the academic and professional aspects in the curriculum*. Doctoral thesis in Technology and learning. School of Education and Communication in Engineering Science. Stockholm: KTH Royal Institute of Technology.
- Etzkowitz, H., & Leydesdorff, L. (1997). *Universities and the global knowledge economy: A triple Helix of university-industry-government relations*. London: Pinter Publishers.
- Fombrun, C. J. (1996). *Reputation: Realizing value from the corporate image*. Boston: Harvard Business School Press.
- Gardner, A., & Wiley, K. (2016). Framing the academic identity of emerging researchers in engineering education. *International Journal of Engineering Education*, 32(6), 2332–2351.
- Gardner, A., & Wiley, K. (2018). Academic identity reconstruction: The transition of engineering academics to engineering education researchers. *Studies in Higher Education*, 43(2), 234–250.
- Gibbons, M., Limoges, C., Nowotny, H., Schwarzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. London: Sage.
- Gioia, D. A., Schultz, M., & Corley, K. G. (2000). Organizational identity, image, and adaptive instability. *Academy of Management Review*, 25(1), 63–81.
- Government Decree on University Degrees (1439/2014).
- Gunasekara, C. (2005). The role of universities in shaping regional agglomeration: Case studies in the Australian setting. *International Journal of Technology Transfer and Commercialisation*, 4(4), 525–539.
- Häikiö, M. (2015). *Hyöry ja tiede: Tampereen teknillisen yliopiston historia 1965–2015*. Helsinki: Suomalaisen Kirjallisuuden Seura.
- Hansson, S. O. (2007). What is technological science? *Studies in History and Philosophy of Science*, 38, 523–527.
- Hansson, S. O. (2015). Science and technology: What they are and why their relation matters. In S. Hansson (Ed.), *The role of technology in science: Philosophical perspectives, philosophy of engineering and technology* (pp. 11–23). Dordrecht: Springer.
- Ivy, J. (2001). Higher education institution image: A correspondence analysis approach. *International Journal of Educational Management*, 15(6), 276–282.
- Jain, S., Gerard, G., & Maltarich, M. (2009). Academics or entrepreneurs? Investigating role identity modification of university scientists involved in commercialization activity. *Research Policy*, 38(6), 922–935.

- Kogan, M., & Teichler, U. (2007). *Key challenges to the academic profession* (Werk-stattberichte, Vol. 65). Kassel/Paris: International Centre for Higher Education Research Kassel (INCHER-Kassel) and UNESCO Forum on Higher Education, Research and Knowledge.
- Lundvall, B.-Å. (1992). *National systems of innovation: Towards a theory of innovation and interactive learning*. London: Pinter Publishers.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myths and ceremony. *American Journal of Sociology*, 83(2), 340–363.
- Morelock, J. R. (2017). A systematic literature review of engineering identity: Definitions, factors, and interventions affecting development, and means of measurement. *European Journal of Engineering Education*, 42(6), 1240–1262.
- Ortega-Colomer, F. J., Pekkola, E., & Heinonen, T. (2017). Role of engineering education in the transition of industry: Central steering or local resilience? In T. Baycan & H. Pinto (Eds.), *Resilience, crisis and innovation dynamics* (pp. 241–250). Cheltenham: Edward Elgar.
- Pawley, A. L. (2009). Universalized narratives: Patterns in how faculty members define “engineering”. *Journal of Engineering Education*, 98(4), 309–319.
- Schmitt, C. (1927). *The concept of the political*. Chicago/London: University of Chicago Press.
- Sotarauta, M., Suvinen, N., & Goddard, J. (2017). *Yliopistoistako maailmanparantajia? Sente työraportteja 38/2017*. Johtamiskorkeakoulu, Tampere: Tampereen yliopisto.
- Stensaker, B. (2004). *The transformation of organizational identities: Interpretations of policies concerning the quality of teaching and learning in Norwegian higher education*. Enschede: CHEPS/UT.
- Stensaker, B. (2015). Organizational identity as a concept for understanding university dynamics. *Higher Education*, 69(1), 103–115.
- Sutela, M., & Cai, Y. (2016). Merger of two universities of applied sciences. In R. Pinheiro, L. Geschwind, & T. Aarrevaara (Eds.), *Mergers in higher education. The experience from Northern Europe* (pp. 161–178). Dordrecht: Springer.
- Talvitie, A. (1962). *Tampereen teknillinen oppilaitos 1886–1961*. Tampere: Tampereen teknillinen oppilaitos.
- Tampere3. <https://www.tampere3.fi/en>. Accessed 22 Dec 2017.
- Tienari, J., Aula, H. M., & Aarrevaara, T. (2016). Built to be excellent? The Aalto University merger in Finland. *European Journal of Higher Education*, 6(1), 25–40.
- Tierney, W. G. (1991). Ideology and identity in postsecondary institutions. In W. G. Tierney (Ed.), *Culture and ideology in higher education: Advancing a critical agenda* (pp. 31–58). New York/London: Praeger.
- Tonso, K. L. (2006). Student engineers and engineer identity: Campus engineer identities as figured world. *Cultural Studies of Science Education*, 1(2), 273–307.
- Ursin, J. (2017). Transforming Finnish higher education: Institutional mergers and conflicting academic identities. *Revista de Investigación Educativa*, 35(2), 307–316.
- Valovirta, V. (1986). *Tampereen teknillinen oppilaitos 1886–1986*. Helsinki: Gummerus.
- Whetten, D. A. (2006). Albert and Whetten revisited: Strengthening the concept of organizational identity. *Journal of Management Inquiry*, 15(3), 219–234.
- Zundel, M., Holt, R., & Popp, A. (2016). Using history in the creation of organizational identity. *Management and Organizational History*, 11(2), 211–235.

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