

# The Universities' Transformation Thesis Revisited: A Case Study of the Relationship Between Nursing Science and Society

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## Abstract

The universities' transformation thesis is often used to characterise the relationship between universities and society. It posits that, over the past few decades, universities have shifted from ivory tower research and disciplinary-based knowledge production to more and more active interaction with the surrounding society and towards transdisciplinary and problem-based knowledge production that targets solving the big problems of our time. The article revisits the transformation thesis in the context of Finnish nursing science at a time when this discipline was emerging at universities and the central arguments of the transformation thesis were formed. Using the social worlds framework, the article analyses the relationship between nursing science and society from the point of view of different social worlds and argues that the transformation thesis only partially captures these perceptions of the relationship between nursing science and society. Finally, the article proposes some other literature to be used in analysing universities' interaction with society and particularly with the profession-oriented disciplines.

**Keywords:** science-society relationship, nursing science, universities' transformation

## Introduction

The universities' transformation thesis is often used to characterise the relationship between universities and society. It posits that, over the past few decades, universities have shifted from ivory tower research and disciplinary-based knowledge production to more and more active interaction with the surrounding society and towards transdisciplinary and problem-based knowledge production that targets at solving the big problems of our time (Slaughter and Leslie, 1997; Gibbons et al., 1994; Etzkowitz and Leydesdorff, 2000; for an

overview, see Hessels and van Lente, 2008). The thesis has been criticised for emphasising science, technology and medicine and not covering the various disciplines of the humanities and social sciences (Albert, 2003; Godin, 1998). It has also been claimed that the thesis is poorly grounded in empirical research in individual disciplines and concrete university contexts (Ylijoki, 2003; Tuunainen, 2005a, 2005b; Ylijoki et al., 2011; Albert and McGuire, 2014). Inspired by these critiques, this article sets out to investigate the relation-

ship between science and society in the discipline nursing science, which represents applied social sciences, and has been discussed very little in the context of the transformation thesis.

The central idea of the transformation thesis is that the relationship between universities and society is changing. This change is illustrated by a contrast between two modes of knowledge production. Mode 1 knowledge production is characterised as autonomous science that is free from outside interests and which concentrates on research questions that arise from science. Mode 2 knowledge production is, by contrast, characterised as research activity that happens in an interaction with society and tries to answer questions that stem from societal needs and ideas. An essential distinction between these two modes is that knowledge produced in the first mode is found to be applicable within the context of a single discipline, but the latter is useful to broader society, including industry and government. Also, in the former, knowledge is produced within the hierarchical university system, whereas in the latter knowledge is produced in multiple arenas and the university is only one site of activity (Gibbons et al., 1994: 3-4). Transdisciplinarity is characteristic of Mode 2 knowledge production, meaning that many disciplines participate in the production of knowledge, but Mode 1 knowledge production happens within an individual discipline<sup>1</sup>. In fact, the claim includes that many actors participate in Mode 2, and consequently, this type of knowledge production has broad effects on the economic development of nation states and regions (Etzkowitz and Leydesdorff, 1998: 204, 2000: 117). The change in knowledge production, it is argued, results in more and more expectations from various directions, pointing to a more reflexive science that would respond to societal needs (Gibbons et al., 1994; Etzkowitz and Leydesdorff, 1998, 2000; Slaughter and Leslie, 1997; Hessels and van Lente, 2008).

This article brings the transformation thesis into the domain of the newly academic Finnish nursing science, which was established as an academic discipline in Finland in 1979. It began as the final stage of the nursing education path, intended to educate nurse administrators, nurse educators and nurses for various positions

of expertise opened up by the growth of the Finnish welfare state (Laiho, 2005, 2012). It was also created to enable nurses to acquire doctoral degrees and to gather the already emergent research in the field of nursing – as, for example, conducted in a research group established by the Finnish professional association of nurses – and move it to universities, where research could be performed alongside other disciplines. The article focuses on this newly academic discipline in the 1990s. The relevance of this historical timing is in that the empirical investigation from the time when the transformation thesis was formulated evidences that the transformation thesis cannot be taken for granted. The article instead suggests that the specificities of the different fields are to be taken into account when designing theories about the evolution of science.

If the transformation thesis is simply applied in this context, Mode 1 knowledge production would mean that knowledge would be produced within the confines of nursing science and for other nursing scholars in order to advance the discipline and accumulate knowledge. There would be limited interaction between nursing science and society. Nursing science would be autonomous, and it would control knowledge production in this area. The Mode 2 knowledge production model, by contrast, would mean that the problems of the nursing sphere would be solved in interaction with multiple actors, such as nurse educators, nurse administrators, nurse practitioners, students of nursing practice and advanced students alike, nursing services in both the public and private sectors, and various care industries, including both official and unofficial therapists that provide care. All these actors would take part in the production of knowledge. The arena of this academic endeavour would be broad and open, so that knowledge would be expected to be applicable in many quarters, not only inside the limited nursing science community, but the various actors involved in the nursing sphere could use it and benefit from it. Knowledge would be produced as an answer to a specific societal problem, and many different disciplines would take part in the process because many different perspectives would be needed to achieve a new solution to the problem. All of society would

benefit from knowledge production in the form of increased welfare and better health. The transformation from Mode 1 to Mode 2 would have happened at a rapid pace, since nursing science was only just established. The article brings new insights into how the knowledge production of nursing science is understood to interact with society and which mode of knowledge production, if it is one or the other, is understood to dominate in its domain.

### **Finnish nursing science in the mid-1990s**

In this article, I focus on Finnish nursing science in the mid-1990s, when the central texts of the transformation thesis were also written. Teaching curricula of nursing science had then been implemented at seven universities (Kuopio, Helsinki, Turku, Tampere, Oulu, Jyväskylä and Åbo Akademi University<sup>1</sup>). These curricula were based mostly in the departments of medicine, with the exception of Kuopio and Åbo Akademi, whose nursing science programmes were organised under the department of social sciences. Many professorships were established either immediately before or during the mid-1990s. By 2000, there were a total of 16 professorships (including associate and assistant ones), 12 other researcher positions and 16 lectureships in the country (Laiho, 2005). These curricula developed rapidly, as there were many students applying to the universities to obtain a degree in the new discipline.

Nursing research was, back then, still at an emergent stage for two main reasons: 1) the need to develop teaching and nursing curricula at universities became the first challenge to be achieved, because there was a flow of students to these programmes that delayed the development of research to some extent; and 2) the pioneers of nursing science themselves were not nursing science graduates but graduates of other disciplines, mostly education, which meant that the research programmes were starting from scratch (AF, 2003; Laiho, 2005; Laiho, 2012). This stage provides an excellent context for this article because it offers a possibility to observe whether the emergent discipline would develop into the kind of transdisciplinary actor suggested by the

thesis, focused on problem-solving and major societal issues through an open collaboration between industry, university and government. Or whether it would be sheltered under the wing of university, where autonomous research could safely be conducted free from outside influences.

In the mid-1990s, Finnish nursing science had established its educational programmes, and it was time to discuss its relationship with society, together with such themes as the basis for and practices of its research, the boundaries and identity of the discipline, terminology, its relationship with other disciplines, and its theoretical and methodological basis (Tuomi, 1997; AF, 2003; Eriksson-Piela, 2003; Laiho, 2005; Laiho, 2012; Vuolanto, 2013; for other countries, see Findlow, 2012; Meerabeau, 2005; Spitzer and Perrenoud, 2006; McNamara and Fealy, 2010). In Finland, there were many lively debates at the time and, in these discussions, various actors presented multiple views of the relationship between nursing science and society (Vuolanto, 2013).

Previous research has discussed the vulnerable position of nursing in academia and its struggles to find its voice there (Meerabeau, 2005; McNamara and Fealy, 2010; Findlow, 2012). Nursing science was founded as part of the nursing profession's efforts to secure and enhance its status in the context of so-called 'academic drift' (e.g. Neave, 1979), which has resulted in identity work that balances between a broad variety of approaches, including professional, ethical, spiritual and biomedical angles (Paley, 2008: 181; Paley, 2011). In terms of the relationship of nursing science with society this means, as McNamara and Fealy (2014: 158) state, that nurse academics are "constantly challenged to secure their discipline's legitimacy in academic and clinical settings as well as the wider public sphere". These characteristics of nursing science provide a particularly interesting setting for understanding the relationship between science and society in the framework of the transformation thesis.

## **Research material and method**

### ***Research material***

The present article analyses the relationship of nursing science with society as articulated by

**Table 1.** The forum, timespan analysed and number of analysed items in the research material.

<b>Forum, timespan analysed and number of analysed articles or news items (in parentheses)</b>	<b>Description of the forum</b>
<b><i>Documents</i></b>	
<b>Archive of the department of nursing science at University of Tampere 1993-1997 (8)</b>	Official documents related to doctoral thesis, master's thesis and meeting minutes of nursing science departmental committee
<b><i>Newspapers</i></b>	
<b>National newspaper, 11.12.-19.12.1996 and archival search<sup>1</sup> (7)</b>	<i>Helsingin Sanomat</i> , Finland's biggest newspaper covering national affairs
<b>Regional newspapers, 16.3.-30.3.1996, 16.12.1996-15.2.1997 and archival search (6)</b>	<i>Aamulehti</i> and <i>Hämeen Sanomat</i> , newspapers in the Tampere region within the sphere of influence of the University of Tampere
<b><i>Professional and scientific journals</i></b>	
<b>Scientific journal of nursing science, 1994-1997 (14)</b>	<i>Hoitotiede [Nursing Science]</i> , the main peer-review journal of nursing science in Finland published by the Finnish Association of Nursing Research
<b>Professional journal of medical doctors, 1996-1997 (1)</b>	<i>Suomen lääkärilehti [Finnish Medical Journal]</i> , the main professional journal for medical doctors in Finland published by the Finnish Medical Association
<b>Professional journal of nurses, 1995-1997 (2)</b>	<i>Sairaanhoitaja [Nurse]</i> , the main journal for nurses in Finland published by the Finnish Nurses Association
<b><i>Other journals and magazines</i></b>	
<b>Popular health magazine, 1996-1997 (2)</b>	<i>Hyvä Terveys</i> , a popular health magazine for the general public
<b>Journal of the scepticism movement, 1995-1997 (10)</b>	<i>Skeptikko</i> , the journal of the Finnish Association of Sceptics
<b>Student bulletin, 1996-1998 (1)</b>	<i>Epione</i> , journal for students of nursing science at the University of Tampere
<b>University student magazine, 1/1996-5/1997 (1)</b>	<i>Aviisi</i> , a student magazine from the University of Tampere students' union
<b>University bulletin, 20/96-2/97 (2)</b>	<i>Yliopisto</i> , a bulletin of the University of Helsinki, the largest university in Finland
<b><i>Newscast</i></b>	
<b>Evening news, 23.3.1996 (1)</b>	<i>YLE News</i> , Finland's main television news broadcaster

Finnish actors in the mid-1990s. The main actors in forming understandings about the relationship between nursing science and society were nursing scholars, medical specialists, sociologists, philosophers, sceptics, nursing science students, nurse practitioners, therapists and patients. There were several fora in which the relationship between nursing science and society was discussed: scientific and professional journals, magazines, newspapers and media broadcasts (see Table 1). The research material was drawn from

these fora because they represent most of the main publicly available and relevant fora for discussing the issue.

I attempted to collect research material from all possible discussion fora of nursing science in the mid-1990s. Also, I tried to include views from as many social worlds as possible. The discussion back then was very lively, and individuals from many different social worlds took part. Most of the discussion was in *Nursing Science*, the main peer-reviewed journal of nursing science in Finland

at the time. Since the launch of this journal in 1989, the majority of the articles in its discussion column were published in 1994-1997 (52%), and after 2002 this column was mostly silent. In 1994-1997, the discussion was particularly rich in nursing science and society issues. These issues were discussed also before and after this time, but only in scattered sets of individual remarks.

What is more, in 1996, due to the Finnish scepticism movement becoming cautious about two dissertations in nursing science at the University of Tampere, one of the main sites for nursing science in Finland, the discussion spread to fora where there would normally be no discussion about nursing science at all, such as *Skeptikko*, the journal of the Finnish Association of Sceptics, and *Hyvä terveys*, a popular health magazine. It was also incredible that, at that time, the topic of nursing science was raised in the nation's main television news and national and regional newspapers. All these fora resulted in a broad variety of individuals reacting to the issue of the relationship between nursing science and society and articulating their views in public. It may be that, later on, the discussion moved to different and less public fora that were less accessible. This makes the mid-1990s an especially fruitful timing for this study.

### **Analysis**

The analysis concentrated on the views on the relationship between nursing science and society expressed in the material. In this analysis, I applied the social worlds framework (Clarke and Star, 2008) to focus on the different views that the various actors had on this relationship. I adopted the idea that the relationship between nursing science and society meant different things to different actors coming from different social worlds in the arena (Clarke and Star, 2008: 123) of nursing science in the mid-1990s and asked how the participants from different social worlds understood the relationship between nursing science and society (Star and Griesemer, 1989) and what their 'multiplicities of perspective' were on the relationship between nursing science and society (Clarke and Montini, 1993: 45). In particular, I focused on the "legitimation processes by which different social worlds establish and enforce the standards

and boundaries" (Gerson, 1983: 358) of an issue. In addition, patients – as silent implicated actors (Clarke and Montini, 1993: 45) whose perceptions about the relationship between nursing science and society were not explicated by themselves but assumed and implicated by other actors – represented the world of the clients of healthcare providers.

Within this framework, I analyse the main actors and their perceptions about the relationship between nursing science and society in the arena of nursing science in the mid-1990s. This analysis is based on a close textual analysis (see e.g. Fahnestock, 2009; Segal, 2009; Ceccarelli, 2001) of the research material where the various actors articulate the relationship between nursing science and society in this arena. I read the perceptions as representing a certain social world, not as an individual's opinion on the issue. The main question is, how was the relationship between nursing science and society perceived by different actors in the mid-1990s? After presenting these perceptions, I discuss, in the light of Modes 1 and 2 of knowledge production and their critique, how these perceptions parallel with or differ from the central ideas of the universities' transformation thesis, which was formulated during the same period of time.

### **Limitations**

I recognize that there are limitations in the research material. The analysis does not cover nursing science textbooks, which could have provided a different angle on the pioneer scholars' understanding of the field, as Tuomi (1997) argues, nor does it look at the editorials in the main Finnish journal of nursing science, a thus far unexplored corpus. However, both of these sources may have overplayed the views of nursing scholars, as they were written by these scholars only, and it would have been against the idea of the present article, which is to find the variety of social worlds that could have something to say on the issue. Another limitation was that the views of the social world of the patients are only stated in the texts written by the other actors, not the patients themselves. To overcome this limitation would have required a questionnaire or an interview study, but both of these sources would have

provided a picture of patient views today, whereas the focus of the study is on the discussion occurring in the mid-1990s, when the transformation thesis was written.

A third limitation, also related to the time frame, is that the discussion of the relationship between nursing science and society today is not part of this study. My research is focused on the discussion of nursing science in one country within a limited time frame. I realise that there are many factors that influence nursing science and have to do with its relationship with society. The transformation thesis is only one lens that could be used to analyse this phenomenon. In my research, I have used boundary work (Vuolanto 2015) and interdisciplinarity (Vuolanto and Laiho 2017). As nursing science is definitely an understudied topic in science and technology studies, the present analysis and these other works aim at providing a starting point for further research on contemporary nursing science in society through science and technology studies. As a historical case study, this analysis may have relevance to contemporary nursing science, as it enables self-reflection on its historical understandings of the issue.

## Multiple perceptions of the relationship between nursing science and society

### *Nursing scholars*

There were many nursing scholars involved in the discussions about the relationship between nursing science and society in the mid-1990s. They were represented by two incumbent professors, a lecturer and an emerita professor from the University of Tampere, one incumbent professor from the University of Turku, and one incumbent professor from the University of Helsinki. They wrote about the issue in many fora: a scientific journal of nursing science (eight articles in a discussion column), newspapers (one article), a student bulletin (one article) and in the professional journal for nurses (two articles). Moreover, they gave interviews in the journal of the scepticism movement (one long interview with a nursing science professor at the University of Tampere), in the university bulletin of the University of Helsinki (two brief interviews with nursing scholars: one a pro-

fessor at the University of Helsinki and the other a former lecturer at the University of Tampere) and in a regional newspaper (a former lecturer at the University of Tampere).

Nursing scholars' perceptions about the relationship between nursing science and society could be understood as divided into two sets. Most of the nursing scholars understood the relationship according to Mode 1, but there were also some whose perceptions were closer to Mode 2 knowledge production.

Especially in situations in which nursing scholars were forced to take a defensive position, their perceptions of the relationship tended to be closer to the mode 1 knowledge production. They provided answers at a time when actors from outside, especially from other disciplines and the scepticism movement, had been active in observing nursing science and had pointed out deviances from the generally acknowledged scientific principles. Reactions to these deviances were strong, e.g. a Humbug Award given to a former master's thesis in nursing science or a text grading nursing science poorly in the authoritative journal of Finnish medical specialists. Thus it was natural that nursing scholars, when given an opportunity such as in an interview of the incumbent nursing science professor in the journal of the scepticism movement, defended their position and their discipline. The defence was verbalised in that the nursing scholars presented nursing science as purely academic ivory tower research, which has a right to exist and administer its subject area without outside intervention. They also emphasised nursing science's societal impacts as great: it produced health and welfare to the society and helped to reform practical nursing, in which large amounts of public and private money were invested. This societal impact legitimated the position of nursing science as an autonomous area at the university. Thus, the nursing scholars emphasised nursing science's right to work in the first mode of knowledge production, as an independent discipline free from outside interests.

The nursing scholars in defense positions also referred to the direct link – and thus the fluent knowledge transfer – of nursing science to nursing practice as a strength. This direct link came partly from the requirement of university education that

all the students accepted to the university must first have obtained nurse qualifications at a lower-level institution. This is specific to the Finnish dual education model, in which nurses are educated at lower-level professional institutions and nursing scholars at universities (for nurse education in other countries, see Spitzer and Perrenoud, 2006). Entrance to universities is not possible without a professional degree. In any case, the dual education model has ensured that nursing science students are qualified and registered nurses who often have long-term practical experience as nurses. They have also research interests directly driven from the practical domain, and their research is expected to be immediately used in practical settings. However, in the mid-1990s, it became necessary for nursing scholars to distinguish academic nursing from the other actors in the field. An excerpt from the interview of a nursing science professor at the University of Tampere helps to understand these views:

It is also a fact that – in general, in getting any message across – that good marketing ensures that the message gets across. Summer universities, centres for supplementary education and adult education centres in healthcare education institutions receive requests from the field at every turn, especially requests to organise education based on Parse's thinking. Thus this education is easy to sell. Hospitals and healthcare centres also organise placement training according to the philosophy in question to some extent. (Ollikainen, 1996: 13)

Here the professor lists other educational institutions which confuse the transfer process of nursing science with their commercial aims. This must be understood in the context of the Finnish higher education system, which is free of charge for the students and publically funded. The problem here is that these other actors in the nursing sphere do not see the value of academic research in the same way as nursing scholars at the university level generally did. The purpose of the text was to separate sincere academic research from commercial goals and to build up the authority of nursing science against various other education that was offered. To the other education institutions, it seemed that anything goes for knowledge in nursing and

that their criteria for knowledge production were dubious. For example, the professor implies that these other actors could consider nurses' theses at lower-level institutions equal to academic doctoral theses or a doubtful theory brought from abroad parallel to university research. These kind of remarks generated an impression of nursing science as the strongest authority within the field of nursing when it comes to knowledge production and its transfer to other settings. Thus the knowledge transfer was seen as an important feature but to be strictly in the hands of nursing scholars. Thus other actors – as expected in Mode 2 knowledge production – were not allowed to dilute the knowledge transfer process of nursing science, and disciplinary context was seen as the controller of knowledge production in which the practices of scientific control by peer review were exercised.

It appears that the nursing scholars in defence positions did value other educational institutions than university, nurses and also the students as important transmitters of nursing science. However, these others appeared not to have similar abilities to evaluate research quality, so they should have only a limited access to the quality control process of nursing science. Thus it seems that the nursing scholars held with the traditional discipline-based peer review system, and they did not see that the new mode (in Mode 2) of wider quality criteria would have become or should become predominant in nursing science. Overall, the writings of the nursing scholars give an impression that nursing science, an emergent discipline at a time when the universities' transformation thesis was written, was in fact somehow affected by new modes of knowledge production such as were suggested by Mode 2 knowledge production. However, even at that time, nursing scholars emphasised the importance of the Mode 1 type of knowledge production and were rather suspicious of the collaborative production of knowledge with non-university actors. This means that they worked towards Mode 1 knowledge production rather than emphasising the new mode. Thus in the social world of nursing scholars, the dominance of Mode 2 knowledge production model would be undesirable and not a good direction for this young academic discipline to take.

There were also some former nursing scholars who did not hold formal positions in nursing science and were thus not in a position to defend the discipline as such. They appeared to have a different view of the relationship between nursing science and society: one that was closer to Mode 2 knowledge production. They were represented by a professor emerita and a former lecturer of nursing science at the University of Tampere. They presented perceptions that nursing science has many starting points and research approaches, often imported from outside the discipline in its rich interaction with society and societal actors such as patient groups and various healthcare occupational groups. In their view, these many actors were seen to participate in knowledge production in nursing. According to the former nursing scholars, nursing scholars were not the main actors in the knowledge production process, but multiple actors produce knowledge together. The former nursing scholars understood that the feelings and perceptions of patients were to be seen more important in this process than the advancement of science and scientific interests. Their perception was that knowledge (that was to be used towards the goal of the good of patients) was to be gathered from different disciplines in a transdisciplinary collaboration. Thus, nursing scholars were not a unified group: there were multiple understandings of the relationship between nursing science and society, even within the group.

### ***Representatives of medicine***

Four representatives from the field of medicine took part in the discussions about the relationship between nursing science and society. Two medical specialists wrote to the professional journal for medical doctors, the popular health magazine and the journal of the scepticism movement: one article for each of these fora. One of the medical specialists was active in the scepticism movement and could be said to have played a dual role, as both a representative of medicine and an activist. In addition, two professors of medicine were involved in the discussions as examiners of a doctoral thesis. The medical specialists and the professors had different views of the relationship between nursing science and society.

The first type of understanding of the relationship between nursing science and society by two medical specialists was similar to that of the nursing scholars in the defensive position. This view could be summarised as a belief that the relationship between nursing science and society should be similar to the relationship between medicine and society. Thus nursing science ought to be a strong and autonomous discipline which maintains control of its knowledge production. This type of understanding emphasised empirical and objective knowledge production and the 'gold standard' of randomised controlled trial and evidence-based medicine (Derkatch, 2008), giving the academic community a great deal of control and power over research topics, and nursing science should act similarly. This view stressed that the disciplinary and academic context is the most central one in the relationship between nursing science and society.

By contrast, the other understanding of the relationship between nursing science and society by the professors of medicine considered the academic community not necessarily less powerful, but a less central actor among the many heterogeneous actors that pose research objectives and control over the quality of knowledge. The case was that a PhD thesis on fasting was under examination at the nursing science department. The thesis clearly belonged to complementary and alternative medicine (CAM), which is not usually taken under scrutiny in Finnish official medicine. The first preliminary examiner, a nursing scholar, had issued a negative statement about the thesis and recommended that it not be accepted as a thesis for a doctoral degree in nursing science. In this situation, two professors of biomedicine, selected as preliminary examiners after the first had been unfavourable towards the thesis, strongly favoured acceptance of the thesis, and in the end, the thesis was indeed accepted as a thesis for the doctoral degree in nursing science. These professors were known as supporters of research on CAM or could be termed as 'CAM-friendly' (Derkatch, 2008) actors.

Apart from the issue of whether CAM was categorised as scientific or unscientific (compare with Gibbons et al., 1994: 3), the argumentation of these two professors reveals that their percep-



tion of the relationship between nursing science and society was closer to Mode 2 knowledge production than that of the first type of understanding of the relationship between nursing science and society. By that I mean that their positive attitude towards CAM also meant that these actors viewed the knowledge production in nursing science to be heterogeneous and the diversity of potential sites where research could take place was emphasised. The network of CAM-friendly actors became an important social and informal community in which knowledge could be formed. In this network, multiple methods and methodologies, multi- and trans-disciplinarity, new societal contexts for knowledge production – such as fasting courses – and multiple interests – for example, popularity among people – were emphasised rather than the scientific community as the primary actor in the knowledge production process. In other words, the CAM-friendly representatives of medicine viewed the relationship between nursing science and society much in the same way as explicated in Mode 2 knowledge production.

### **Sociologists and philosophers**

Two philosophers (one professor and one researcher) and one sociologist (a researcher in a university sociology department) were involved in the discussions about the relationship between nursing science and society. Each of them wrote one article published in the Finnish journal of nursing science in the mid-1990s. Their articles analysed the discipline from a broad theoretical viewpoint drawn from the philosophy of science. In their articles, it appeared that they saw the commitment of nursing science to societal objectives the most central feature of the discipline. They understood the knowledge base of nursing science to emerge from many different disciplines and societal actors, also from the non-professionals and from traditional knowledge about care. They held that knowledge production in nursing science took place in a dialogue between researchers and research participants, e.g. patients. Their views on the relationship between science and society can be interpreted as leaning more towards Mode 2 knowledge production than Mode 1.

### **Sceptics**

The sceptics are a community of scholars and laymen who feel it is their mission to defend science from unscientific knowledge (*Skepsis*, 2015). The sceptics were not necessarily themselves academics (e.g. the secretary of the movement) in a sense that they conducted research or held academic positions, but they could be amateur scientists who strongly felt it was their mission to guard science from unscientific attacks. The Finnish Association of Sceptics participated in the discussions about the relationship between nursing science and society as an association by giving their 1996 Humbug Award to a former master's thesis in nursing science. Additionally, the secretary of the movement wrote very actively about the issue in the Association's journal (three articles) and in the bulletin of the University of Helsinki (one article). She also interviewed the professor of nursing science at the University of Tampere after the Humbug Award was conferred.

The sceptics characterised nursing science as a young discipline and provided understandings of the relationship between nursing science and society from the point of view of a mature bearer – or 'watchdog' – of the scientific world view (Forstorp, 2005). They argued that the relationship between nursing science and society was vulnerable because the unscientific societal currents may make an incursion to the scientific arena through nursing science. They also formulated the view that, as a young discipline, nursing science was on a societal and cultural ground where there were a great many other actors as well, particularly marketers of non-science and CAM actors. As a consequence, the relationship between nursing science and society required a well balanced and well controlled transfer of knowledge to society according to the rules and norms of the purest of academic communities and adhering to the Mode 1 type of knowledge production, otherwise the rampant and unorganised movements would infringe on what was the property of pure academic science.

Thus, in the view of the sceptics, the relationship between nursing science and society should be closer to Mode 1 knowledge production than Mode 2. In their opinion, knowledge production was not to be interfered with by an unscientific

network of actors both inside and outside science and, as such, they acted as a quality control for Mode 1 knowledge production on behalf of science. They were willing to protect autonomous ivory tower research.

### ***Nursing science students***

Two nursing science students were involved in the discussions of the relationship between nursing science and society. One of them wrote a newspaper article in a regional newspaper, and another was interviewed by the University of Tampere student magazine. A specific feature of Finnish nursing science is that the students have to finish their professional qualifications for becoming a registered nurse and complete the practical training periods for their nursing degree (at separate educational institutions: the polytechnics) before entering university-level educational programmes. Thus nursing science students often have extensive experience from nursing practice, and they may have worked as nurses for several years before their university studies. It is also typical that they continue to work during their university studies. This situation means that their role is to act as intermediaries between science and nursing practice, to transfer knowledge from universities to the various settings of practical work.

In fact, these students are expected to transfer knowledge both ways: the nursing scholars need the connection to nursing practice and the students bring insights and reports about the current status of and reforms in nursing practice to the scholars while also taking theories and viewpoints from university research with them to the settings of practical knowledge. Students are expected to transfer knowledge in ways that help improve and reform practical work and help nursing scholars stay in touch with the actual work that their research aims to reform. For nursing scholars, this intermediate role means that nursing science at university level does not need to train nurses in practical issues, but instead to train them in the theoretical and methodological skills needed for research and to enhance their writing and reporting abilities for their work as administrators, teachers of polytechnics or researchers. Thus, the relationship between nursing science and society becomes relevant in

the intermediary role of nursing science students: they are expected to be Mode 2 actors, mediating and conveying knowledge to the various settings of their heterogeneous work, research, and educational contexts related to nursing science.

However, in the discussions of mid-1990s, this intermediary role was severely disturbed. A group of nursing science students were enthusiastic about conveying knowledge of certain theoretical viewpoints and used certain books in their intermediary role. They felt happy about finally finding a theory that was fairly easy to mediate and were also sufficiently fluent in translating it to practitioners. Then, out of the blue, immediately after the Humbug award was given by the sceptics, this theory and the related books were banned by decision of the nursing science departmental committee. A theory that had been accepted and was easily transferable to practice was in one night turned into dubious knowledge not to be used at all. The students were dumbfounded: what were they to do with their own theoretical works using the banned theories and books? And, even more acutely, what would happen to their credibility as intermediaries if they had to tell the practitioners that this theoretical viewpoint, which they had the day before happily promoted, was no longer accepted and was now to be forgotten altogether?

From the point of view of the nursing science students, the banning of the books and theories meant a severe fracture in their role as intermediaries. The first mode of knowledge production applied by the nursing scholars in the decision to ban hampered the students' orientation towards the Mode 2 type of knowledge production, which was closer to the understanding of the free flow of knowledge between various organisational settings and different actors. The peer review type of quality control and shifting the power balance towards the autonomic power of academic and disciplinary actors in line with Mode 1 knowledge production was greatly different from the type of action that the transfer role had previously given to students. Now the transfer of knowledge was much more difficult due to the students being forced to always ask permission and the restriction in what knowledge could be transferred to practice; they had to be cautious about their actions and not transfer knowledge that was not

approved by the scholars. No wonder the students became uneasy: they had to change position in their social world and start acting differently.

### ***Nurse practitioners***

There was only one nurse practitioner involved in the discussions of the relationship between nursing science and society in the written material used for this study. This is surprising, because nurse practitioners are fundamental actors in nursing science: the discipline concerns their work, practices and anything that goes on in the world of practice, be it patient care in the settings spanning from acute care to elderly care and from psychiatry to operating rooms, administration and multiprofessional collaboration, or teaching the next generation of nurses. However, in this context, it must be borne in mind that all nursing scholars are themselves always and necessarily also nurse practitioners, as follows from the requirements for university admission in Finland, and, consequently, they have the education and formal qualifications to work in practice.

One explicit expression by a nurse was published in the form of a question in a Q&A column in the journal for professional nurses. This nurse was astonished at the decision to ban books and theories. In her question, she tried to pose 'understanding the patient' as a major societal problem that needed to be solved through research and developmental work in collaboration with various actors rather than by research ghettoed to the university alone, restricted by prohibitions, bans and the strict interests of academic professors. This nurse could not understand how curiosity and openness could be encouraged and the key question of the patient's welfare could be solved in this kind of restricted knowledge production model. So again, we see the juxtaposition between two modes of knowledge production, this time from the point of view of the practitioners' social world. The relationship between nursing science and society formulated from the nurse practitioners' social world would then be closer to Mode 2 knowledge production than that of Mode 1.

There is one additional dimension to this relationship between nursing science and society view if we consider the implications that nursing

scholars give about the practitioners' view in their writings. The nursing scholars expressed the opinion that the practitioners – because they did not have the qualifications to do research work – did not have the same autonomous copyright on and ownership of knowledge on nursing as the nursing scholars did. The nursing scholars must be the guards who ensure that no unscientific knowledge enters the nursing sphere, and the nursing scholars had that ownership. This view restricted the world of nurse practitioners, as there was then no dialogue, and the reflexivity required by Mode 2 knowledge production did not appear possible. This indicated that, for example, cultural knowledge drawn from professional tradition ought to be forbidden and hidden, even though it, in the view of nurse practitioners, could belong to the Mode 2 type of knowledge production.

### ***CAM therapists***

Two CAM therapists participated in discussing the relationship between nursing science and society. One of them was a therapist who had held fasting courses for obese patients for weight reduction purposes. She wrote two statements related to her PhD thesis, one article for the professional journal of medical doctors, and an article for the popular health magazine. She was also interviewed in the evening news by Finland's main television newscaster. The other therapist actively promoted therapeutic touch to be used in patient care. She wrote for publication in the regional newspaper and the bulletin of the University of Helsinki: one article for each.

The CAM therapists' perceptions about the relationship between nursing science and society implied that nursing science could benefit from and utilise traditional Eastern medicine and indigenous peoples' traditions of care. Knowledge would be produced in a broad open model in line with Mode 2 knowledge production, with different actors participating in nursing science knowledge production, including open communication between nurses, medical doctors and therapists of various kinds. Knowledge production would broaden the social composition of the review system, namely therapists and patients would become important actors in the review of knowledge. The boundaries between

professionals, therapists and patients would be loosened, and open communication between them would be valued. An important notion in this connection was that patients were considered to know what was best for them and thus they were considered the best ones to determine the criteria for applicable and best knowledge. The principle "anything goes that works for the patient" would be applied rather than strictly scientific quality control and thus knowledge quality control would become based on patients' judgment and not just the judgment drawn from academic work.

Multidisciplinarity and transdisciplinarity were central in the therapists' view of the relationship between nursing science and society in solving the problems of patient care. Multidisciplinarity, for them, meant the inclusion of CAM actors and perspectives in research and developmental work for the good of patients. Thus, in the therapists' views of the relationship between nursing science and society, CAM was one perspective to be taken seriously among the other perspectives, nursing science and medicine. From the point of view of therapists, nursing scholars would be the ones to promote the openness of the scientific system, to be reflexive and include the voices of individuals and groups that have traditionally been seen to be outside the scientific system. The most important aspect to consider would be the good of the patients, and the implications of knowledge in this aspect would be highlighted rather than the academic aims of knowledge production, which emphasise the growth of knowledge in separate parts of the patient. The therapists also stressed that the Mode 1 type of knowledge production had led to the current system of dividing the patient into separate parts to be cured and forgetting the patient as a whole. Nursing science was seen as a potential counterforce to the 'sliced individual' model and specialised medicine, and thus it could reform this less patient-oriented view and replace it with the holistic patient care model.

In the discussions of mid-1990s, the therapies and viewpoints of the therapists were judged to be unscientific and outside the scientific domain. Thus, the academic knowledge production model was emphasised, the science-oriented worldview was raised above other worldviews, and scientific methodology was referred to as incomparable to

the haphazard judgment of individual patients. This boundary work (Gieryn, 1983, 1995, 1999) to build up the credibility of nursing science and to separate the scientific from the unscientific appeared also to juxtapose the Mode 1 and Mode 2 types of knowledge production. Whereas the nursing scholars appealed to Mode 1 knowledge production, the therapists used Mode 2 knowledge production terminology as a rhetorical strategy in gaining acceptance of the standpoint of CAM and its culture in researching and developing healthcare.

### **Patients**

The social world of patients cannot be understood from their own active contributions to the discussions of the mid-1990s. Thus, the patients could also be called silent implicated actors (Clarke and Montini, 1993: 45): their understandings of the relationship between nursing science and society were implicated by other actors. In a complete analysis of the different actors' views on the relationship between nursing science and society, it is important also to pause to think about how patients were understood to take part in the production of knowledge as this was indeed constructed by other actors. In general, Mode 1 knowledge production by the nursing scholars and sceptics perceived patients as the passive objects of scientific studies. They were not considered as participating in knowledge production at all, but were seen to form the object of academic work. Knowledge must be properly tested first and then academics would judge whether knowledge concerning the welfare of patients would be useful or not. Knowledge production was not necessarily understood to have a practical goal concerning an individual, but was an issue to be solved from the point of view of a group of patients, which made it knowledge that could be produced purely based on academic interests.

Therapists, in contrast, claimed that patients had an active role in nursing science knowledge production. Patients were the key knowledge producers of nursing science, and would provide new perspectives in their interaction with other actors, including nursing scholars, biomedicalists, and other knowledge producers such as therapists. The value of patients lay in judging

the relevance and usefulness of knowledge in the context where knowledge is directly applied to patient care, not necessarily before that was tested and scrutinised according to lines of research determined by academic actors only. Thus, depending on the actor, the relationship between nursing science and society of patients was flexibly either Mode 1 or Mode 2 knowledge production.

## Discussion

Analysis shows that there were multiple perceptions of the relationship between nursing science and society in the mid-1990s. This could be analysed well by using Modes 1 and 2 to distinguish between the different dimensions of the relationship between nursing science and society and the many types of understandings about the relationship between nursing science and society. However, when it comes to actual change in nursing science, the mid-1990s provides evidence that the academic forces around the discipline at its early stages of development tended, rather, to emphasise the autonomy and power of the academic community in knowledge production. In addition, these actors under the purview of a university were more likely to stress the homogenous academic lines and principles whereby knowledge is produced within nursing science instead of a heterogeneous composition of actors taking part in knowledge production. It follows from these views that quality control of nursing science was understood to be traditional, based on academic peer review systems rather than the loosening of the quality control of academics and “loosing the control” of scholars to a broad range of other actors (Albert and McGuire, 2014: 41).

Yet simultaneously, there are voices that seem to live in the understanding that the Mode 2 type of knowledge production may be preferable in nursing science rather than that of Mode 1. They promote this view in their writing and thus attempt to make room for multiple actors who could take part in the quality control of nursing science. They act and speak for transdisciplinarity and heterogeneity of actors as beneficial to the knowledge production process. However, these actors come from outside the academic

community and represent a different kind of world view from that of the academics and, as a consequence, their power to shift the knowledge production mode of nursing science towards Mode 2 is limited.

Hence, my analysis of the relationship between nursing science and society provides very little evidence that the knowledge production mode of nursing science would have been transformed or, at the early phase of the discipline, immediately changed from Mode 1 to Mode 2. It is also unlikely, based on the views of nursing scholars, that the Mode 2 would have become the dominant understanding of knowledge production at this early stage. Rather, the study draws a picture of knowledge production as a complex, discipline-specific and negotiated process in which many actors with divergent interests and power from different social worlds function simultaneously, as other studies have also shown (Ylijoki, 2003; Tuunainen, 2005c; Albert and McGuire, 2014). In the discussions of nursing science at the time when the transformation thesis was written, many understandings of Mode 1 and Mode 2 co-existed. Therefore, the case supports views that more sociological empirical research is needed to understand the power struggles over knowledge production between different social groups and to add more sociological approaches, for example, Bourdieu's concept 'field' in these studies to understand the divergent interests that social interaction contains (Albert et al., 2007; Albert and Kleinman, 2011).

The connection of knowledge production to the economic development of nation states is central to the transformation thesis, but based on my analysis of the relationship between nursing science and society, the consequences of nursing science knowledge production did not include straightforwardly economic issues, and rhetoric about nation states was non-existent. However, nursing scholars raise themes regarding commercialisation in their view of the relationship between nursing science and society. These themes were referred to in negative terms when the scholars were concerned about commercial activities in connection with nursing, e.g. in educational institutions that charge tuition. In the views of these scholars, commercial activities

were seen to threaten the purity of the academic endeavour, and commercial education ran counter to academic education and the aims of academic knowledge production. In their views of the relationship between nursing science and society, the nursing scholars cleansed nursing science of economic terms and saw commercial activities as being fully separate from academic ones, which speaks more of Mode 1 type of knowledge production than the possible coming of an entrepreneurial university model (Slaughter and Leslie, 1997).

The transformation thesis claim that knowledge is increasingly produced in transdisciplinary contexts receives no support in the early developmental stage of nursing science and the discussions of its relationship between nursing science and society. On the contrary, nursing scholars emphasise nursing science identity work (Henkel, 2000; Amsterdamska, 2005) particularly strongly, which tells us more about contributing to a single discipline than being open to trans-disciplinary collaboration. The lone actors that highlighted the importance of multidisciplinary were weak actors, such as therapists: those who did not have positions in nursing science. The significance of the disciplinary identity work lies in the fact that it was necessary in the early stage of nursing science development to situate this young discipline on the disciplinary map and to develop its disciplinary culture and practices, even though it worked against transdisciplinarity. Thus, transdisciplinarity did not seem relevant or tempting from the point of view of the strongest actors, but rather a threat that the other actors would gain the power to define their discipline. In this sense, the transformation thesis fails to capture the early stage of development of nursing science.

The idea of the transformation thesis, that a change has taken place in the public awareness and expectations, should also be discussed here. As stated at the beginning of this article, nursing science grew out of a public interest in providing nurses and their professional associations with a discipline that would enable and encourage research in the field of nursing (Laiho, 2012). It becomes evident in the views of the relationship between nursing science and society that there is nothing new in this public call for accountability

and reflexivity. On the contrary, nursing scholars considered it self-evident that there was a direct link from practice to research and vice versa. In addition, many parties – including therapists, nurse professionals, and CAM-friendly representatives of medicine – presented their views in the debate about the greater reflexivity and the demand that their own actions be justified by nursing science. The change toward which nursing scholars were trying to turn the discussion was that nursing science could be reflexive and consider these different interests only to a limited extent. Nursing scholars worked in a direction that would limit the other parties' demand for reflexive nursing science and multiple views, and they tried to protect the autonomy of the discipline. Thus, again, the ideas of the transformation thesis do not seem relevant in the context of a profession-oriented discipline strongly both backed up and demanded by professionals and other parties even as early as its inception.

Critics of the transformation thesis have argued that the thesis was written from the point of view of science and technology rather than the humanities and social sciences (Albert, 2003; Godin, 1998). The perceptions about the relationship between nursing science and society show how the newly academic discipline of nursing science, belonging to the applied social sciences, does not seem to fit into the transformation thesis in a straightforward manner. Modes 1 and 2 can be used as an analytical toolkit, but the thesis in general fails to capture the multiplicity of views concerning the relationship between nursing science and society. The multiplicity has here been categorised according to the main poles of knowledge production presented by the thesis, but it becomes evident that there were actors – particularly the incumbent nursing scholars, enforced by the sceptics and biomedicalists to some extent – that drove nursing science towards Mode 1 knowledge production at the early stage of this field's development. Also there were forces and actors – especially the former nursing scholars, practitioners, therapists, CAM-friendly representatives of medicine and students – who pulled it in the opposite direction, towards the Mode 2 type of knowledge production. As a result, there is no evidence of a shift from one mode

to the other. The criticism of the heterogeneity of academic disciplines and the science-society relationship is thus strengthened by an analysis of nursing science. In this sense, nursing science offers a further reason to criticise the transformation thesis for its generality and lack of empirical validity (Hessels and van Lente, 2008: 13-14).

In addition to the discussion about Modes 1 and 2, there are other possible ways of elaborating on the relationship between nursing science and society. One of them is provided by Albert et al. (2007; Albert and McGuire, 2014). They propose that instead of the two camps or Modes 1 and 2 of knowledge production, scholars balance between two poles, production for producers and production for users. In their view, researchers are involved in both production destined for producers and others destined for users. The case of Finnish nursing science supports this view: the scholars and other actors were balancing service and science much in the same way as Albert and McGuire (2014) found in the case of medical education.

Another way of elaborating the relationship between science and society is provided by Ylijoki et al. (2011), who are critical of the transformation thesis and focus on finding a way to analyse the university-society relationship that would be sensitive to disciplinary differences in knowledge production. They distinguish between the different markets of university research to illustrate the diversity of forms that the university-society relationship takes: academic market, corporate market, policy market, professional market and public market. The academic market means that the main reference group of knowledge production is the scientific community and the main aim is to contribute to this field in top-ranked publications. The corporate market's reference group are companies and the target of knowledge production is commercial benefits. Policy market means that public administration bodies are the reference group for knowledge production and policy relevance of knowledge is highlighted. Professional market aims at professional development for the reference group of the profession. Public market, in turn, aims at production of knowledge for the general public and to empower ordinary people. To conclude my discus-

sion, I use these markets to open up the relationship between nursing science and society in a way different from that of the Mode 1 and 2 discussion.

My analysis of the relationship between nursing science and society indicates that all the different markets existed in the views of the different actors in the mid-1990s. The academic market was quite strong, and nursing scholars particularly emphasised the ethos of this market when they put forward their understanding of the relationship between nursing science and society. The academic market was also debated and challenged as the only way of understanding the relationship between nursing science and society, as there were views that the corporate market had entered academia in the diverse forms of commercial education that took place in non-academic educational institutions. The policy market was especially activated by representatives of medicine, who reminded everyone of the policy guidelines – especially in the form of evidence-based practice – that were to be followed, also in nursing science. The professional market was part of this profession-oriented field, which was apparent from the needs and hopes of the nurse practitioners' views of the relationship between nursing science and society. The public market was revealed especially in the views of the therapists and nursing science students, who promoted the involvement of the general public, especially patients, in nursing science knowledge production processes. As my research was focused on the mid-1990s, studying these different markets in depth would be an important step further towards understanding the interaction of contemporary nursing science with society.

## Conclusion

The analysis in this article concentrated on how the different actors from different social worlds understood the relationship between nursing science and society during the mid-1990s and how these different understandings fit with the central ideas of the universities' transformation thesis, which were brought forward at the same time. This analysis provided an opportunity in a new setting to add to the criticism of the transformation thesis failing to capture the whole of the

university and its various settings (Albert, 2003; Godin, 1998; Hessels and van Lente, 2008; Tuunainen 2005a, 2005b). Thus far, there has been a lack of knowledge about the ways the profession-oriented disciplines – among them nursing science, social work and education – reflected upon the concurrently claimed market-oriented trends and values. My analysis confirmed that there are different currents in knowledge production that belong to the central ideas of the transformation thesis, but that the claimed transformation is “no straightforward or unidimensional phenomenon but takes a variety of forms in different disciplines and organisational settings” (Ylijoki, 2003: 327).

To understand the relationship between universities and society even more fully, there is further work to be done. This article has shown the limits of the transformation thesis in capturing a profession-oriented discipline in the mid-1990s, but although it has been successful in this task, there is no doubt that it only provides a partial

view of contemporary nursing science. Further studies are urgently needed to analyse the relationship between nursing science and society in the present day in order to understand nursing science in its more mature developmental stage and to find possible changes in the perceptions of different actors. In this task, it would be important to use a broader range of literature than the works arguing about universities’ transformation in the mid-1990s. This article points to at least two sets of literature: the critique of the transformation thesis and the social worlds framework, both of which are shown to be beneficial in understanding the dynamics of science-society interaction. Also, this article has shown the limits of the transformation thesis in one profession-oriented discipline. There is a need to empirically investigate a broader set of disciplines of the same kind, and in this way include them as relevant entities in the current university world.



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## Notes

- 1 More discussion on multi-, inter-, and trans-disciplinarity in Bruun et al., 2005 and Frodeman, 2010.
- 2 Since then, the curricula in Jyväskylä and Helsinki have been ended and at present five universities continue with nursing science programs (AF, 2003).
- 3 The archive search term was 'nursing science' in the electronic newspaper archives of the newspapers.