

The Intellectual and Social Organisation of Knowledge Production and Transfer in Humanities and Social Sciences

Christian Schneijderberg, INCHER-Kassel

1 Introduction

Researching knowledge production and transfer in humanities and social sciences is similar to researching the appendix attached to knowledge and technology transfer in natural sciences, engineering and medicine. Like the appendix in the human body most people know that knowledge production and transfer in humanities and social sciences exists, that it is connected to and part of a larger system, and that hopefully it does not develop in a way it should not. Here the analogy ends as knowledge production and transfer in humanities and social sciences will most likely not be removed in a worst case scenario. The aim of this paper is getting the appendix back into the system, *ergo* understanding knowledge production and transfer in humanities and social sciences as part of German public university system and its functions of research and teaching.

The analysis of knowledge production and transfer has a long history. Evaluating some major works on knowledge production and transfer two issues become evident, no matter whether being normative or social concepts (Solla Price 1974; Kuhn 1969, 1997a, 1997b; Böhme et al. 1973, 1976a, 1983; Krohn and v.d. Daehle 1998; Irvine and Martin 1984; Funktowitz and Ravetz 1993a, 1993b; Zimann 1994, 2000; Gibbons et al. 1994; Nowotny et al. 2001; Slaughter and Leslie 1997; Etzkowitz 1998; Etzkowitz et al. 2000; Etzkowitz and Leydesdorff 1997, 1998, 2000; Knorr-Cetina 1999; Bleiklie and Byrkjetflot 2002)¹. First, they all focus on natural and technical sciences. The major issues are the interest and influence of the state and clients, e.g. industry and business, on sciences, and the social and intellectual organisation of the sciences (Lakatos and Musgrave 1997; Spiegel-Rösing 1973; Whitley 1974a, 1984, 2010; Stehr 1975; Strasser and Knorr 1976; Weingart 1997; Gornitzka 2003; Laredo 2007). More recently qualitative research on knowledge and technology transfer (Mora et al. 2010; Schneijderberg and Teichler 2010) and the search for suitable indicators for third mission activities (Molas-Gallard and Castro-Martinez 2007) became prominent. Second, humanities and social sciences are of minor or no importance at all. Conversely, these major works have been well perceived in humanities and social sciences, e.g. the perception of Kuhn's writings (Masterman 1997; Martins 1972; Lammers 1974; Weingart 1974; Barnes 1982; Wright 2006).

Already defining knowledge production in humanities (Alber 1970; Raymond 1982; Bühler 1987; Mittelstraß 2002; Guetzkow and Lamont 2004; Guilroy 2005; Leitch 2005; Donoghue 2008; Kern 2008) is challenging. Only a few authors dealt explicitly with knowledge transfer in social sciences (von Alemann, 1975), the social relevance of social sciences (Nowotny 1975) and the symbolic mode of application also known as legitimacy assumption (Knorr

¹ The New Production of Knowledge (Gibbons et al. 1994; Nowotny et al. 2001), also known as Mode 2 of knowledge production, is considered to be the most prominent – normative – conceptualisation in recent debates (Hessels/van Lente 2008). It has been heavily criticised as “new wine in old bottles” (Weingart 1997) and its claim of being a social theory is contested (Pestre 2003), e.g. as being a *Zeitdiagnose* (Välimaa/Hoffman 2008).

1976). Even less insight exists about third mission activities in humanities and social sciences (CEST 2007; Benneworth and Jongbloed 2010).

The intellectual and social organisation of knowledge production and transfer also has an ideological dimension. Barnett (2003), when analysing the commercial activities the “entrepreneurial university is engaged” is placing the university “on an especially risky course. It may be risking more than it understands for it may be risking *itself*. In coming to be a different kind of institution, it risks coming to live by new sets of values” (Barnett 2003: 66). Donoghue (2008) refers to this different kind of institution as the corporate university driven by *Academic Capitalism* (Slaughter and Leslie 1997; see also Münch 2007; 2009). Analysing humanities in the US, Donoghue identifies mainly two reasons for the corporate dissatisfaction with higher education after the turn of the 20th century: a shift in the expectation of (economically valuable) output and the missing awareness of the role of a humanities professor as a public intellectual (Donoghue, 2008; see also Davidson/Goldberg 2004; Brooks 2008). Much has been written about the “crisis of the humanities”, the “culture wars”, the meaning of scholarship in humanities and its social relevance (Raymond 1982; Mittelstraß 1989, 2002; Weingart et al. 1991; Guillory 2005; Brooks 2008; Gentmann et al. 2005).

Admittedly, knowledge production and transfer in humanities and social sciences is a difficult topic to address. First of all, a clarification of knowledge production and transfer is necessary:

“Valorisation therefore is about transfer and uptake of knowledge, and is broader than the idea of commercialisation, which is engagement activity motivated by making a commercial profit. Despite this definition, valorisation has largely become understood in terms of universities’ economic contributions through patenting, licensing, spin-off formation and technology transfer. This therefore has the potential to overshadow the much wider set of contributions which universities make more generally to their societies.” (Benneworth and Jongbloed, 2010: 568)

In fact the valorisation impacts or social relevance, of humanities and social sciences are often diffuse, hard to measure and often materialise as intangible long-term returns of activity. By using this conception as a starting point, the main interest of the enquiry was to describe and define motivation, nature, extent, number, profits and problems of cooperation focusing on knowledge transfer, i.e. the valorisation or social relevance of scientific work. In doing so the enquiry pursued two goals. First, scientifically sound background information need to be obtained about the cooperations focusing on knowledge transfer in humanities and social sciences. The second objective was to describe and define modes and types of knowledge transfer in humanities and social sciences.

In the following section the methodology and setting of the inductive enquiry will be explained. The presentation of results will start with offering insight about the attitude of professors concerning knowledge transfer. Section four will deal with the three missions of research, teaching and knowledge transfer. Issues addressed are the workload of professors, characteristics and results of research, research funding, and application for

external grants. Section five deals with cooperations² focussing on knowledge transfer. An analysis of partners of cooperations focussing on knowledge transfer, modes of transfer and examples of successful and unsuccessful cooperations focussing on knowledge transfer will be presented. In section six five types of knowledge transfer in humanities and social sciences, four types of interdependent cooperations focussing on knowledge transfer distributed across three different levels are presented and a theoretical model for framing knowledge transfer in humanities and social sciences will be discussed.

2 Methodology and Enquiry

For enquiry of knowledge production and transfer in humanities and social sciences a mixed-methods study was conducted at University of Kassel, Germany. The enquiry was supported by the vice-president being responsible for humanities and social sciences and the transfer office UniKasselTransfer. In early summer 2009, six semi-structured expert interviews (Meuser and Nagel 2005) were conducted with professors at the University of Kassel. The interview had the following issue areas: 1) Opportunities for cooperation focusing on knowledge transfer and options for transfer of scientific results; 2) forms of cooperation and knowledge transfer; 3) Knowledge generation and revenue for the university; 4) opportunities and risks for research and education; 5) attitude and motivation of professors; 6) general framework and incentives for professors; 7) findings and outcomes suitable for knowledge transfer; 8) meaning of cooperation focusing on knowledge transfer for the primary tasks in research and teaching; and 9) strategy, promotion and support services at the University of Kassel. The interviews were fully transcribed (Kuckartz et al. 2008: 27-31), anonymised and analysed using the software MAXQDA (version 2007). The content analysis (Mayring 2010) produced first results and an interim-report was written for UniKasselTransfer.

The interviews produced a slightly better understanding of what knowledge transfer and cooperations focusing on knowledge transfer could mean in humanities and social sciences. Unfortunately no definitions could be retrieved. Consequently a general explanation was presented in the introduction to the questionnaire for a common understanding of both terms. The theoretical underpinning for these definitions is provided by Wilkesmann et al. (2009: 6). Wilkesmann et al., borrowing from Argote and Ingram (2000) and Szulanski (1996: 28), emphasise that knowledge is created in interaction of actors: individual actors as well as collective actors. This implies that a source and beneficiary or audience can be indicated. Wilkesmann et al., borrowing from Inkpen and Tsang (2005: 149), accentuate that knowledge is subject to modification during transfer – understood as a social process (see also Stehr 1994; Stehr and Grundmann 2010). Consequently the transfer process can be a process of knowledge production. On these theoretical bases knowledge transfer was defined as knowledge exchange process which can be either a single-sided or mutual process. Cooperations, as a broad concept, can take place as uni- or multilateral exchange and in form of projects³. In principle, all persons or institutions external to the University of

² This enquiry was done in German. The German term *Kooperation* is rather a neutral term which therefore is translated with *cooperation*; more insight about the nature and quality of cooperations focussing on knowledge transfer would allow the use of collaboration or partnership.

³ For a discussion of the implications and significance of the organisation of research in the shape of projects see Torka (2009).

Kassel can be considered as partners for cooperation: museums, businesses, charities, foundations, courts or the like. Also other scientists of the University of Kassel can be involved. For the enquiry these definitions worked well and the broad use of terminology was only criticised by very few respondents.

Also categories and valuable information for the design of the questionnaire was obtained from the content analysis of the interviews. All interview-partners made clear that the process of knowledge production and transfer was not to be separated from the primary functions of research and teaching. Moreover it was considered as integral part of the primary functions. To further qualify this process substantial information was collected on research and teaching. For comparison reasons many questions were copied from the recent study *The Changing Academic Profession*⁴ (Jakob and Teichler 2011) which was conducted in 2007/08. The results from the German sub-study are used for orientation when discussing this single case enquiry. The questionnaire consisted of six issue areas: 1) general information and disciplinary background; 2) research; 3) teaching; 4) cooperation focusing on knowledge transfer; 5) support offered by University of Kassel; and 6) personal information. The survey was carried out with an online questionnaire using the software online.QTAFI. The field phase was in winter semester 2009/10.

The response-rate is 50%. From the population of 143 professors (40 female, 103 male), 72 professors (21 female, 51 male) participated in the study. Of the professors 46% are in the highest rank of a C4/W3-professorship⁵ and 49% the second highest of a C3/W2-professorship. The remaining 5% are employed as C2/W1-professor and on a contract. More than 80% of professors did start working at University of Kassel after the millennium; and, more than half of all professors in between 2005 and 2009. More than two thirds of all professors accepted the first call for a professorship at the University of Kassel.

Normally the discipline is the main variable when analysing the actions of professors (Biglan 1973; Whitley 1974, 1984; Kolb 1981; Clark 1984; Becher 1984, 1989; Del Favero 2003). As the enquiry is focussing on University of Kassel numbers are too small for an analysis according to discipline. The basic population of this enquiry of 143 professors is working mostly in aggregated departments containing disciplines like economics, education, history, language and literature, law, music, philosophy, political sciences, sociology or theology. Therefore for analysis humanities and social sciences are used as independent break variables. The self-attribution by professors results in 42% of professors belonging to humanities and 58% to social sciences.

Before starting the analysis the attitude of professors towards knowledge transfer will be presented. This will be helpful for further understanding.

⁴ The study *The Changing Academic Profession* from 2007/08 is a representative enquiry among almost 6.000 scientists (4.071 at higher education institutions and 1.640 at research institutions; response rate 32%) in Germany (Jakob and Teichler 2011: 14-15). It is a successor of the 1992 Carnegie study (Boyer et al. 1994; Altbach 1996; Enders and Teichler 1995a, 1995b, 1997).

⁵ For an explanation of the status-system of professors in Germany see Pritchard (2006: 106-109).

3 Attitude of Professors towards Knowledge Transfer

“I am also for the advancement of peace, of course, who would be opposing knowledge transfer? [...]. Knowledge transfer as exchange among theory and practical experience is necessary. But we also need the ivory tower – we need areas, which are not irritated by permanent engagement.” [Interview B (209)]⁶

The attitude of professors in humanities and social sciences towards knowledge transfer is ambivalent, as presented in the interview quotation above. On the one hand professors consider knowledge transfer as “part of scientific everyday life” [Interview E (100)]. They also consider it being a chance for “accessing additional funds” and becoming aware of “burning issues of social practice” [Interview F (69)]. Professors express strong motivation about starting cooperations focussing on knowledge transfer. But they also add that generating additional funds can not be the driver for this, e.g. “doing research on medieval ages is not the subject for getting additional money from industry” [Interview A (15)]. On the other hand professors are critical about several aspects related to knowledge transfer: first, the possible threat to academic freedom was raised in all interviews. Especially further use of knowledge generated in cooperation with partners external to sciences and the publication of results of contract research, also in case the client dislikes the results, were regarded as challenges a professor has to deal with exercising knowledge transfer. Also “keeping a healthy distance to the field of research and its actors” [Interview C (74)] was considered important. A second critical aspect was the expectation of the university towards professors. Here the conflicting goals of universities (Schimank 2001) surfaced: performing well in the primary functions of research and teaching, fulfilling the missions and generating external funding, ideally from different sources. Notably the diffuse regional mission of the University of Kassel and the encouragement to generate additional funds was considered to be rather challenging as a combined goal. Professors are expected to be excellent in research; they are also expected to acquire high-reputation grants, e.g. from the German Research Association DFG; and to being active in cooperating with all kinds of public and private entities. The situation can be made transparent with a quotation from an interview:

“Colleagues are not happy with the agreements on objectives, as cooperations should evolve from a common interest and not the other way round. We know that the university is under pressure to generate additional funds. E.g. in the past year I published two books which got excellent reviews. During the periodical reporting procedure (*Bilanzgespräch*) they [university leadership; note CS] express their gratitude for the good books. And, what about externally generated funds? This is like with the Sword of Damocles.” [Interview E (116-118)]

Third, the money-driven influences on the choice of research topics of professors were of great concern to all interviewees. During discussions images like the “what would you like me to do” professor [Interview D (51)] or a “go-getter” and “busy-bee” (*Betriebsnude!*) [Interview B (212)] surfaced. Fourth, professors reported that knowledge transfer was expected to be free of charge, especially in humanities. This was reported to be a general expectation, no matter whether public authority or private business. The four positive and four negative points made by professors are exemplary.

⁶ Question: The German Research Council wrote that knowledge transfer has to be adequately supported in the science system as a whole. What do you think about this?

The examples from the interviews highlight the ambiguous attitude of professors towards knowledge transfer. For the design of the questionnaire the main issues pro and contra knowledge transfer were grouped and classified. They were presented as follows to obtain a better understanding of the opinion of professors on knowledge transfer:

Table 1 Opinion of Professors about Knowledge Transfer in Humanities and Social Sciences (in percent of yes-answers)

Knowledge transfer and cooperations focussing on knowledge transfer...	Humanities	Social Sciences	Total
...are predominantly an unilateral accomplishment of the university to others.	39	30	34
...are a mutual accomplishment.	35	50	44
...are an obligation of the university.	46	69	59
...are becoming rampant.	20	8	12
...need to be reinforced/expanded.	28	48	39
...must bring new insights/results to the university/researchers.	78	62	70
... are rewarded in an appropriate way by the University of Kassel.	5	11	9
...are hardly perceived by society at large.	23	11	16
...must be part of the primary function of the professor.	50	56	54
...must be counted as ancillary activity of professors.	10	15	13
Count (n)	(24)	(32)	(56)
Question: To what extent do you agree with the following statements: 1 = Fully agree; 5 = Do not agree at all; yes-answers from 1 and 2			

Most support was given to the item *knowledge transfer must bring new insights/results*, especially by professors from humanities. In comparison to humanities more professors from social sciences see knowledge transfer as a *mutual accomplishment*, an *obligation of the university* and almost half of them agree that it *needs to be expanded/reinforced*. Professors are rather undecided (scales value of three) whether knowledge transfer *should be reinforced/expanded* (43%) and whether they are *perceived by society at large* (44%); to the latter item 32% do not agree. Quite interestingly, is the distribution of answers on item knowledge transfer is *rewarded in an appropriate way*: 28% do not agree at all, 26% do not agree, 37% are undecided and no professor fully agrees. A similar distribution indicates the item knowledge transfer must be counted as *ancillary activity* of professors. No professor fully agrees, 39% do not agree at all, 33% do not agree and 15% are undecided. About the complementary item knowledge transfer must be *part of the primary function* 27% of professors are undecided, 12% do not agree and only 8% do not agree at all. As a summary it can be stated that the majority of professors in humanities and social sciences agree that knowledge transfer must bring new results/insights to the university/researcher, is an obligation of the university and that it should be part of the main office of professors.

Like for table 1 the statements in table 2 are abstracted from the interviews. For getting a clear cut picture of the opinion of professors about how knowledge transfer can be promoted best they were asked to distribute 100 points across the following five items:

Table 2 Opinion of Professors on Promotion of Knowledge Transfer in Humanities and Social Sciences (arithmetic mean)

With regard to promoting knowledge transfer and cooperations focussing on knowledge transfer...	Humanities	Social Sciences	Total
...there should be more time so research results can be examined and re-evaluated.	31	31	31
...for the short term additional funding should be provided by the university.	18	21	20
...the university should offer a reduction of the teaching load.	18	18	18
...the university should offer more general support to professors.	10	12	11
...professors should be left alone by the university.	23	17	20
Count (n)	(23)	(27)	(50)
Question: According to your preferences, please allocate altogether 100 points across the following five areas:			

The last statement *professors should be left alone by the university* is the only statement with a difference among humanities (23 points) and social sciences (17 points). It also received twice as many points from professors whose research is strongly based in one discipline (42 points) and professors having preferences primarily in research (39 points). The distribution of points clearly shows that for the promotion of knowledge transfer professors require more time for the examination and re-evaluation of research results. Almost one quarter of the points was give to the statement professors should be left alone. This picture is complemented by professors giving only 11 points for more general support offered by the university. With regard to promoting knowledge transfer professors consider additional short-term funding and a reduction of the teaching-load as leverages of the university.

The attitude towards knowledge transfer and motivation of professors in humanities and social sciences can be described as tentatively positive. It circulated mainly around three issues. The first issue is the academic profession and its values. A second issue addresses the organisational setting and working conditions at university. As a last issue knowledge transfer can be described as an open, nebulous field of chances and uncertenties to professors. These ambiguous certainties should be kept in mind when reading the results and analysis of this enquiry which are presented next.

4 The Three Missions of Research, Teaching and Knowledge Transfer

4.1 Workload of Professors

In the section above it has become clear that knowledge transfer is regarded to be integral part of the primary functions of research and teaching by the majority of professors in humanities and social sciences. Therefore the allocation of time spent on different tasks by professors is a good indicator for the potential engagement in knowledge transfer. On average professors in social sciences spent a slightly higher amount of time on research and knowledge transfer/cooperations than their colleagues in humanities. Conversely professors in humanities use a bigger share of their workload for teaching.

Table 3 Workload of Professors spent on different Tasks in the Academic Year 2008/09 in Humanities and Social Sciences (in percent)

	Humanities	Social Sciences	Total
Research ^a	23	26	25
Teaching ^b	40	35	36
Knowledge Transfer/Cooperation	8	11	10
Administration	15	14	15
Administrative Office/Academic Self-Government	14	14	14
Count (n)	(29)	(42)	(71)
Question: Please estimate the percentage of time spent on the following tasks during the past academic year. a Research: Reading literature, writing, conducting experiments, fieldwork. b Teaching: Preparation of instructional materials and lesson plans, classroom instruction, advising students, reading and evaluating student work.			

The field other was not made use of in the questionnaire. Female professors spent in total 20% of their time-budget on research compared to male professors who spent 27% on research. The teaching-load during the winter semester 2008/09 and the summer semester 2009 was the obligatory eight hours each. Professors were also asked how many hours they taught in continuing education in the academic term 2008/09. The arithmetic mean was 19 hours (7 in humanities; 27 in social sciences) but the median was a straight zero.

Comparing the results on workload of this enquiry, with the results of the study *The Changing Academic Profession* (Jakob and Teichler 2009, 2011), short CAP, from 2007/08 professors in the humanities and social sciences at the University of Kassel spent less time on research (25%; CAP 39%) and more time on teaching (36%; CAP 32%), during a full academic year. Comparing CAP data on research and teaching among humanities/social sciences and natural sciences/engineering the latter use 40% for research and 18% for teaching (Jakob and Teichler 2011: 131). For all disciplines Jakob/Teichler find the decrease of time spent on teaching the most striking change in the workload of university professors in Germany. In 1992 professors did spent 43% of their time-budget during teaching periods on teaching and only 29% on research. In 2007/08 the percentage of time spent on teaching (34%) and research (31%) is almost at the same level, again during teaching periods only. The other items can only be used for orientation due to a different attribution in CAP⁷. Jakob and Teichler found that professors in total spent more time on third mission activities. The percentage of time used for scientific services rose from 8% in 1992 to 11% in 2007/08 (Jakob and Teichler 2009; 2011: 24-32, 129-133). In 2007/08 professors in humanities/social sciences spent 6% of their time on scientific services compared to 19% by their colleagues in natural sciences/engineering (Jakob and Teichler 2011: 131).

Comparing 1992 to 2007/08 the total amount of working-time spent on administration remained stable (Jakob and Teichler 2009; 2011: 129-133). Professors in humanities and

⁷ CAP question B1: Teaching: Preparation of instructional materials and lesson plans, classroom instruction, advising students, reading and evaluating student work. Research: Reading literature, writing, conducting experiments, fieldwork. Service: services to clients and/or patients, unpaid consulting, public or voluntary services. Administration: committees, department meetings, paperwork. Other academic activities: Professional activities not clearly attributable to any of the categories above.

social sciences spent 15% of their workload on administration (Jakob and Teichler 2011: 131). For this enquiry the CAP item administration (committees, department meetings, paperwork) was separated in time spent on administration and administrative office/academic self-government. The aim was to get a better picture of either activity. Curiously the percentage of time spent on either activity is almost the same (administration 15%; administrative office/academic self-government 14%). Compared to CAP this indicates that professors in humanities and social sciences at the University of Kassel use twice as much time for the same activities. This rather stunning result can be explained with the high standard deviation for administration (humanities 14; social sciences 8; total 11) and administrative office/academic self-government (humanities 14; social sciences 8; total 12).

Unfortunately the shift of tasks for professors can not be qualified in detail for this study. Research following up on the shift of tasks for professors suggests an “unbundling” (Kinser 2002: 13) of the holistic concept of academic practice (Parsons and Platt 1968, 1973; Barnett and Middlehurst 1993; Kogan and Teichler 2007; Locke and Teichler 2007) and a subdivision of academic work⁸. Musselin found that in French universities professors “are less and less in contact with concrete scientific work as they “raise funds, develop contacts, write project proposals” (Musselin 2007: 178). Musseline, like Jakob and Teichler (2009, 2011: 24-32), states a rising allocation of working-time spent on third mission activities and a constant level of administrative workload of professors.

4.2 Characteristics and Results of Research

To gather explanatory variables for the knowledge transfer and cooperation activities professors were asked to specify their research according to selected aspects:

Table 4 Research Orientation in Humanities and Social Sciences in Comparison to CAP (in percent; multiple answers possible)

	Humanities	Social Sciences	Total	CAP*
Basic/theoretically-oriented	70	63	65	74
Applied/practically-oriented	44	62	55	61
Commercially-oriented	4	3	5	6**
intended for knowledge transfer	48	44	45	
Socially-oriented/intended for the betterment of society	46	55	52	59
International in scope or orientation	42	40	47	69
Based in one discipline	50	21	33	37
Multi-/interdisciplinary	60	78	71	66
Count (n)	(28)	(40)	(68)	(56)
Question: How would you characterise the emphasis of your primary research this (or the previous) academic year? 1= very much; 5 = not at all; total of yes-answers from 1 and 2 * Jakob/Teichler 2011: 156 ** CAP item: commercially-oriented/intended for technology transfer				

⁸ Coaldrake suggests that the subdivision of academic work creates “para-academic roles” (Coaldrake 2000: 21). Macfarlane argues that the academic all-rounder is disappearing. He deduces the rise of para-academics as a result of the parallel process of growing numbers and up-skilling of administrative and professional support staff and a parallel process de-skilling of the all-round academic (Macfarlane 2011: 62-63).

Research of professors in humanities is slightly more basic/theoretically-oriented than applied/practically-oriented. In social sciences there is almost no difference. Women professors indicate their research being more applied/practically oriented (1.9) than their male colleagues (2.5). Research in humanities and social sciences is clearly not commercially-oriented and has a moderate but positive tendency towards knowledge transfer. The separation of the two elements commercial and transfer of the CAP-study has proven to be useful. Professors do claim their research being socially-oriented/intended for the betterment of society. The international scope or orientation of professors in CAP is higher than with professors at University of Kassel. Professors from humanities consider their research being more based in one discipline and less multi-/interdisciplinary compared to professors in social sciences. The latter consider their research clearly being more multi-/interdisciplinary than based in one discipline.

Professors were asked to further characterise their research activities:

Table 5 Characteristics of Research in Humanities and Social Sciences in Comparison to CAP (in percent; multiple answers possible)

	Humanities	Social Sciences	Total	CAP*
Are you working individually/without collaboration on any of your research projects?	86	95	91	81
Do you have collaborators in any of your research projects?	61	64	63	61
Do you collaborate with persons at other institutions in Germany?	71	80	76	74
Do you collaborate with international colleagues?	32	59	48	58
Count (n)	(28)	(39)	(67)	(56)
Question: How would you characterise your research efforts undertaken during this academic year? Percentage of yes-answers *Jakob/Teichler 2011: 154				

More than 90% of all professors do individually conduct research and more than two thirds have collaborators in any of their research projects. More than three quarters do collaborate with persons at other institutions in Germany and almost 60% collaborate with international colleagues. Again, the value for international collaboration is lower than the value from CAP.

Looking at the number of publications and other research products professors in humanities and social sciences at University of Kassel are just as productive as colleagues from other universities in Germany.

Table 6 Number of Publications and other Research Products in Humanities and Social Sciences in the Past Three Years compared to CAP (arithmetic mean)

	Humanities	Social Sciences	Total	CAP*
Scholarly books you authored or co-authored	0.6	0.7	0.7	0.9
Scholarly books you edited or co-edited	1.6	2.1	1.9	2.2
Articles published in an academic book or journal	11.2	14.3	13	14.5
Research report/monograph written for a funded project	0.9	2.2	1.6	1.5
Paper presented at a scholarly conference	6.7	10.4	8.9	6.1
Professional article written for a newspaper or magazine	1	4.5	3.1	3.3
Being on radio or television	2	2.3	2.2	1
Count (n)	(28)	(40)	(68)	(54)
Question: How many of the following scholarly contributions have you completed in the past three years? *Jakob Teichler 2011: 161				

The minor variations among the number of publications and other research products, and the characteristics of research allows the unadorned conclusion that the production and cooperation activities of professors in humanities and social sciences are to be considered as average for Germany. This leaves research funding as a last and important point for clarification of the basic setting before turning to the analysis of cooperations focussing on knowledge transfer.

4.3 Research Funding, External Research Grants and Working-Time of Professors

The biggest share of research funding in the humanities and social sciences is provided by the University of Kassel. In the humanities this share of basic research funding is two thirds. Another fifth of the funding is given by public research funding agencies in Germany. The mix of funding sources is bigger in social sciences. Basic research funding accounts for 41% and 16% is provided by public research funding agencies in Germany. Other sources are government entities (16%) and private not-for-profit foundations/agencies (12%). Research funding by private business or industry is rather insignificant, especially in humanities.

Table 7 Funding of Current Research by Funding Source in Humanities and Social Sciences (in percent)

	Humanities	Social Sciences	Total	CAP*
University of Kassel	66	41	51	50
Public research funding agencies in Germany (e.g. DFG)	20	16	18	18
Public research funding agencies in Europe (e.g. EU-Programmes, ESF)	3	2	2	
Government entities	2	16	10	10
Business firms or industry	3	7	5	6
Private not-for-profit foundations/agencies (e.g. Volkswagen-Foundation)	4	12	9	12
Other	2	2	4	4
Count (n)	(23)	(35)	(58)	(49)
Question: In this (or previous) academic year, which share of funding for your research was given by the following sources?				
*Jakob/Teichler 2011: 158				

Applying for external research grants does have a significant influence on the budget of a professor. The budget share of basic funding by University of Kassel is about 70% for professors with one or two external research grants. The share further decreases to about 30% for professors with three to five external research grants. For the latter 43% of the budget originates from public research funding agencies in Germany.

On average, professors applied for 3.6 external grants, in the period from 2007 to 2009. Of the 3.6 applications for external grants 1.9 applications were successful and 1.7 applications were unsuccessful. Though the success rate is slightly higher, a professor has to write about two applications to get funding for one project. Professors in the social sciences are more active applying for external grants than their colleagues in the humanities. The assumed normal distribution does present considerable outliers (*Ausreißerwert*), as the following table shows.

Table 8 Number of applications for external grants in the period 2007-2009 in Humanities and Social Sciences

		Humanities	Social Sciences	Total
Successful Application for External Grants	Arithmetic Mean	1.0	2.6	1.9
	Standard Deviation	1.2	2.8	2.4
Unsuccessful Application for External Grants	Arithmetic Mean	0.9	2.2	1.7
	Standard Deviation	1.0	3.6	2.9
Total Applications for External Grants	Arithmetic Mean	1.8	4.8	3.6
	Standard Deviation	1.6	5.7	4.8
Count (n)		(27)	(40)	(67)
Question: For how many external grants did you apply in the past three years?				

A significant⁹ correlation exists between the total amount of applications for external research grants and the research activity of professors. A high research activity results in more applications for external research grants (0,216*). The higher the research is multi-/interdisciplinary the more external grants are applied for (0,311**). Professors claiming their research being more strongly based in one discipline are less active in applying for external research grants (-0,273*). A strong correlation between writing applications for external research grants and the amount of working-time spent on the primary functions of research and teaching was found. Professors with no external grants spent 52% of their time on teaching and only 15% with research. Among the professors with no external research grants about two thirds are temporary replacement professors (*Vertretungsprofessuren*) in the status of C3/W2-professors. Writing applications and competing for a professorship are prominent activities in addition to teaching. Generally there is a significant correlation between the amount of working-time spent on teaching and applying for external research grants. The more professors are involved in teaching the less applications for external research grants are written (-0,272*).

Professors having three or more external research grants spent an equal amount of working-time on research and teaching. Professors having received one or two external research grants spent 39% of their working-time on teaching and 26% on research. The break-even point of working-time spent on research and teaching is three to five external research grants with about 28% each. The amount of working-time of professors spent on cooperations and transfer of knowledge does increase according to number of external research grants: 8% with one or two external research grants to 10% with three to five external research grants to 13% with more than five external research grants. Professors with no external research grant spent 6% of their working-time on cooperations and transfer of knowledge. This result is interpreted as an indicator that at least some cooperations and transfer of knowledge activities are executed without extra funding. The working-time used for administration (15%) and administrative office/academic self-government (14%) is not affected by increasing research activities of professors and remain stable (see table 3).

5 Cooperations focussing on Knowledge Transfer

5.1 Partners

Professors in the humanities and social sciences show a tendency to establish longer-lasting partnerships. On average they cooperate with 3.8 partners (humanities 3.5; social sciences 4.1) on a permanent basis and with 1.7 partners (humanities 1.2; social sciences 2.2) only once. On average professors in the humanities were involved in two cooperations focussing on knowledge transfer¹⁰ and professors in social sciences in five cooperations during the academic year 2008/09. Adjusting the extreme values the median remains two cooperations focussing on transfer of knowledge in humanities and reduces to three in the social sciences

⁹ Die Hypothesen wurden als quasi-parametrisch nach Pearsons geprüft. Bei auftretenden Signifikanzen sind die Korrelationen entweder auf den dem 0,01 Niveau (einseitig) signifikant, im Folgenden mit zwei ** gekennzeichnet, oder auf dem Niveau von 0,05 (einseitig) signifikant, im Folgenden mit einem * gekennzeichnet.

¹⁰ Question: How many cooperations focussing on transfer of knowledge did you accomplish in the past academic year? („Wie viele Kooperationen mit Dritten, mit Fokus auf den Wissenstransfer, haben Sie im vergangenen Studienjahr durchgeführt?“)

(total median 2). Professors in the social sciences are involved in more cooperations focussing on transfer of knowledge than professors from the humanities. Professors involved in one (median) cooperation focussing on transfer of knowledge have less than one full time equivalent (FTE) position for a research assistant. Professors having one to two cooperations get support from two FTE positions and professors with more than two cooperations by three FTE positions for research assistants.

The number of partners in cooperations focussing on transfer of knowledge is variable. One fifth of cooperations are with one partner. Professors in the humanities cooperate more often with two partners. In the social sciences cooperations with three partners or more are common.

Table 9 Number of Partners in the Academic Year 2008/09 in Humanities and Social Sciences (in percent)

	Humanities	Social Sciences	Total
One Partner	21	19	20
Two Partners	47	12	27
Three Partners	16	27	22
Four to Ten Partners	16	23	20
More than Ten Partners	0	19	11
Count (n)	(19)	(26)	(45)
Question: In how many cooperations focussing on transfer of knowledge did you participate in the past academic year?			

Generally professors consider their effort for cooperations focussing transfer of knowledge neither high nor low. On a lickert scale with one being very high the arithmetic mean of professors in the humanities is 3.1 and in social sciences 2.8 (total 2.9). As effort as such is hard to measure the number of cooperations is considered an indicator for high or low effort. Significant results were found correlating research based in one discipline or being multi-/interdisciplinary, respectively, and involvement in cooperations focussing on transfer of knowledge: The higher the research is multi-/interdisciplinary the higher is the effort of professors (0,301*); And, as the other side of the coin, the higher the research is based in one discipline professors are involved in the less cooperations focussing on transfer of knowledge (-0,318*). Also correlating basic/theoretically-oriented or applied/practically-oriented research¹¹ with effort for cooperations shows significant results: the higher the research is applied/practically-oriented the more cooperations existed (0,340**) and the more partners were involved (0,393*). Additionally, the effort is higher by professors who's research is highly applied/practically-oriented (0,354**). Also teaching has a strong influence on cooperations focussing on transfer of knowledge. The more working-time professors spent on teaching the less they are involved in cooperations (-0,355**) and the less partners are involved in cooperations (-0,281*).

Partners for cooperation focussing on knowledge transfer are from varying backgrounds.

¹¹ It has to be noted that basic/theoretically-oriented and applied/practically-oriented are relative measures. Professors could indicate that their research is both highly basic/theoretically-oriented and applied/practically-oriented. This was done in some cases.

Table 10 Partners of Cooperations focussing on Knowledge Transfer in the Academic Year 2008/09 in Humanities and Social Sciences (in Percent)

	Humanities	Social Sciences	Total
Scientists at University of Kassel	57	52	54
Scientists from other Higher Education Institutions	71	61	65
Public and Private Research Institutes	5	39	25
Public Entities from Kassel or the Region North Hesse	38	42	40
Public Entities form elsewhere in Germany	43	48	46
National and International Organisations	10	36	25
Foundations	38	42	40
Business firms or industry from Kassel or the Region North Hesse	5	16	12
Business firms or industry form elsewhere in Germany and Worldwide	0	19	12
Count (n)	(21)	(31)	(52)
Question: Who were your partners in cooperations focussing on knowledge transfer? Percentage of yes-answers			

More than half of professors in the humanities and social sciences cooperate with other scientists¹² from the University of Kassel. Almost two thirds cooperate with scientists from one or more other higher education institutions. Due to the mere existence of a bigger number of public and private research institutions cooperations are far more prominent in social sciences. An example for a public research institute in the humanities mentioned in one interview is the Institute for German Language (Institut für Deutsche Sprache, Mitglied der Leibnitz-Gesellschaft). Also a regional focus is evident: more than 40% of professors cooperate with public entities from Kassel or the region North Hesse; cooperations with business firms or industry from Kassel or the Region North Hesse or elsewhere in Germany and worldwide are more often to be found in the social sciences – but are not very prominent, in general.

5.2 Analysis of Cooperations Focussing on the Transfer of Knowledge

Until to now neither a clear picture nor a typology of cooperations focussing on knowledge transfer in the humanities and social sciences exists. For the interviews with the professors four questions were generated to identify possible categories and types of cooperations focussing on knowledge transfer. First, they were asked about the scope for cooperations and transfer of knowledge in their discipline and, more generally, their department. Second, professors were asked to name any kind of cooperations focussing on knowledge transfer and identify the characteristics. In a follow-up question they were asked to specify the cooperations named by them relating them to the primary functions of research and teaching and the combination of research and teaching. Third, professors were asked how these cooperations were initiated. This question was further differentiated according to initiation of, governance and communication within the cooperations named by professors. Fourth,

¹² In the questionnaire there was no distinction made about the difference of professor and scientist. Therefore the category scientist can contain any other individual considered a scientist below the rank of a professor as well.

different forms of cooperations identified and promoted by the German Research Council (Wissenschaftsrat 2007) and their applicability for the humanities and social sciences were discussed. The forms are continuing education; contract research and consultancy; expertise, lectures and participation in any kind of discussions; affiliate institutes to the university (*An-Institute*); problem or field related clusters, no matter whether institutionalised or not; sponsored professorships (*Stiftungsprofessuren*); university spin-offs; and, transfer in continuing education (*Personaltransfer bzw. personengebundener Transfer*), e.g. joint development of curriculum, internships and writing of bachelor or master thesis in cooperation with an enterprise.

The interviews showed that the forms promoted by the German Research Council are mainly suitable for the transfer of knowledge and technology in natural and technical sciences. Only continuing education was considered suitable for humanities and social sciences. Also the transfer of knowledge via internships is common in study programmes in the humanities and social sciences at the University of Kassel. It became also clear that knowledge transfer was rather easy to grasp when formally institutionalised, e.g. sponsored professorships (three chairs in economics, in 2009), continuing education by the International Management School or the service provided by the *An-Institut* International Study Centre/Language Centre. Aiming to gathering further information on types and modes of cooperations focussing on knowledge transfer several questions were generated for the questionnaire. The aims were to amend information and further qualify the cooperations focussing on knowledge transfer. Therefore professors were asked to report about selected activities:

Table 11 Other Activities of Professors during Academic Year 2008/09 compared to CAP (2007/08) in Humanities and Social Sciences (in percent; multiple answers possible)

	Humanities	Social Sciences	Total	CAP*
Served as a member of national/international scientific committees/boards/bodies	38	54	48	44
Served as peer reviewer (e.g. for journals, research sponsors, institutional evaluations)	42	72	60	52
Served as an editor of journals/book series	77	85	82	67
Served as an elected officer or leader in professional/academic associations/organizations	81	57	67	37
Served as an elected officer or leader of unions	0	14	8	1
Been substantially involved in local, national or international politics	9	8	8	1
Been a member of community organizations or participated in community-based projects in Kassel or the Region North Hesse	42	33	37	n.a.
Worked with local, national or international social service agencies	30	43	38	20
Count (n)	(26)	(41)	(67)	(59)
Question: During the past academic year, have you done any of the following? (multiple answers possible) Percentage of yes-answers *Jakob/Teichler 2011: 165				

Analysing the interviews clarified that seeking an explicit distinction of activities belonging to either research and teaching, or knowledge transfer would not meet the social reality of professors. Orienting the total with the total of the CAP-study professors in humanities and social sciences at University of Kassel seem to be pretty active in all aspect. Again an item about the regional focus was added, due to the regional mission of the university.

While analysing the interviews several modes of cooperations focussing on knowledge transfer could be identified. As the modes were not distinct categories the main features of the modes were operationalised and tested, as shown in the following table:

Table 12 Modes of Transfer in Cooperations focussing on Knowledge Transfer in Humanities and Social Sciences (in percent)

	Humanities	Social Sciences	Total
Transfer of findings/outcomes generated in basic/theoretically-oriented research	44	43	43
Transfer of findings/outcomes generated in applied/practically-oriented research	41	66	57
Transfer of findings/outcomes generated in cooperations focussing on knowledge transfer	41	50	46
Transfer by Continuing Education („Personaltransfer“)	5	10	8
Contract Research	14	15	15
Expert Reports/Expertise/Consultation	24	50	40
Lectures/Discussions	65	82	74
Count (n)	(26)	(39)	(65)
Question: How important were the following modes of transfer in your cooperations focussing on knowledge transfer? Arithmetic Mean: 1= very much; 5 = not at all; percentage of yes-answers			

Table 12 provides evidence that all the modes of knowledge transfer presented are more important in the social sciences than in the humanities. Among the items only the mode *lectures/discussions* clearly shows a positive tendency. Clearly a negative tendency has the mode *Contract Research*, which does not seem prevalent in humanities and social sciences. The mode *Expert Reports/Expertise/Consultation* is quite more at the fore in social sciences than in humanities. Curiously professors seem to have a clear picture of an existing difference between transfer to human resources in the context of cooperations focussing on knowledge transfer and knowledge transfer to students.

Rather equivocal are the total arithmetic means of the modes transfer of findings/outcomes generated in a) basic/theoretically-oriented research, b) applied/practically-oriented research and c) cooperations focussing on knowledge transfer. The three results are interpreted, first, that professors in humanities and social sciences are interminded about transfer of findings/outcomes generated in any of the three modes. Due to small numbers no clues for interpretation about the slight differences among the two groups could be found; second, and this interpretation comes more like a thesis, the three modes are hardly distinguishable and are three parts of the same picture of the production and transfer of knowledge in humanities and social sciences. The aim to making the three modes distinguishable would require sharp definitions of transfer from a) basic/theoretically-oriented research, b) applied/practically-

oriented research and c) cooperations focussing on knowledge transfer. Providing such clear cut definitions is considered rather difficult and was not an aim of this enquiry.

5.3 Analysis of Successful and Unsuccessful Cooperations Focussing on the Transfer of Knowledge

The analysis of the interviews provided a portfolio of diverse and complex information on cooperations focussing on knowledge transfer. Further analysis was planned by using the method of contrasting. In the questionnaire professors were asked to give one example of a successful and one example of an unsuccessful cooperation focussing on knowledge transfer. The professors were asked to provide the following information for each example: who were the partner(s), who initiated it, what was the timeframe, what are the results and what are the parameters for success or failure, respectively. Unfortunately the plan did not work. Successful cooperations were reported by 32 professors, but only seven reported unsuccessful cooperations. Additionally the differences among the successful and unsuccessful cooperations were only found in the way the cooperation was organised. Even unsuccessful cooperations produced results such as an accepted project with the German Science Foundation, publication of two books or getting to know other researchers and working modes of other disciplines. Therefore the material was scrutinised with a content analysis. Statistics are provided for additional information when ever possible.

Examples for successful cooperations were manifold. Precise examples were cooperation with the local fire brigade (fitness training and diagnostics), the Kassel encyclopaedia, a local court, cooperations with industry, e.g. on steering or sustainable development, with a municipality on ageing, or cooperations with schools and social services. Some examples were abstract like evaluation or assessment of a project or programme. And other examples were only referred to like Intercultural research project funded by the German Research Foundation, or only the funder was mentioned, e.g. Federal Ministry for Education and Research. Also cooperations were reported being exclusively with other universities, sometimes across European borders. The cooperations focussing on knowledge transfer were initiated in about half of the cases by the professor. About one third of cooperations were initiated by one of the partners. In almost 60% of the cases the cooperation was a common initiative based on a previous cooperation. The median of average duration of cooperations was 24 months (humanities 27 months; social sciences 24 months). The minimum period for cooperation was one month and the maximum 214 months. About 80% of the cooperations terminate after no longer than 36 months. Of these 80% about one third of cooperations each last for up to 12 months, 13-24 months and 36 months.

Results or products of cooperations are just as versatile: many professors mentioned the report for the client or the funding entity; other results mentioned are improvement of teacher education, parents accepting a new approach to teaching in school, a new e-learning platform, improvement of physical condition, education of choirmasters, interpretation of law, history for public at large, model for scientific and practical use, method for the sustainable steering of processes in industry, data for further research and, as a last but important example, an idea and partner for a follow-up research proposal. One professor was precise,

accounting three dissertations, one spin-off, two A-journal articles, ten A- and B-conference presentations and one book as the results from cooperation. Overall more than two thirds of the cooperations produce results for both scientific and practical use. Just in a few cooperations results were reported to be for practical use only. As a conclusion, results or products of knowledge transfer are hardly divisible along strict lines of scientific and practical use only. The process of production and context of transfer appear to be strongly interdependent. They are integral to scientific practice and cooperations focussing on knowledge transfer in humanities and social sciences.

The parameters influencing success or causing trouble of cooperation focussing on knowledge transfer are of different nature. For the personal level categories of success are high personal engagement, committed co-workers, personally knowing your partners, good working atmosphere and dedicated partners. Categories positively influencing the content level are common research interests, expertise about the topic (*Fachkompetenz*), being open minded/venture on a new issue, non-ambiguous question for research and interdisciplinary approach. Categories reported as having negative influence on the content are involvement of too many different disciplines, too many partners and changing expectations, especially from partners external to science. Categories influencing the general framework of cooperation are sufficient or insufficient funds, the duration of cooperation, i.e. having enough time to get the work done, and having an active project coordinator. Categories causing trouble are language, i.e. knowledge of English as common working language, big geographical distances of partners and having to travel a lot. Challenges arising from cooperations with partners external to science are changes in expectations concerning the mode of research, use of results, i.e. issues of privacy and copyright, use of university research as a means to an end by partners from business and industry and, finally, social and communication deviations and misunderstanding based on differences of the worlds of academia, politics and economy.

The parameters having positive or negative influences on the personal and content level and the general framework of cooperations focussing on knowledge transfer are rather general in nature. This is largely due to the scope of this enquiry. For further research the categories extracted from the answers of the professors would require further substantiation, especially according to discipline. The insight gathered provides good grounds for generating a typology of knowledge production and transfer in humanities and social sciences, which will be presented next.

6 Knowledge Transfer in Humanities and Social Sciences

Kuhns (1969, 1997a, 1997b) research has caused a revolution in the social understanding of science. The thesis of “finalization of science” (Böhme et al. 1973, 1976, 1983; Krohn and v.d. Daehle 1998) has introduced the fact “that cognitive orientations and institutional structures are inter-related” (Weingart 1974: 56). Therefore scientific processes and the production of knowledge “may be generated on either the cognitive or the social level” (ibid.). Weingart stresses that the relationship between the two levels is problematic by itself as the analysis of the “inter-relation between cognitive and social factors and their interdependent

change processes is, of course, the analysis of the institutionalization of science (ibid.). Of major importance when researching the inter-relation between cognitive and social factors is the plurality or equivalence of the audience addressed or involved in knowledge production and transfer (Whitley 1984: 46 et seqq., 110 et seqq., 146 et seqq.; Lammers 1974; von Alemann). Especially the “plurality and diversity of employment opportunities and access to research facilities and funds” (Whitley 1984: 236) is an obvious factor for analysis. The dynamics (Rip 1997: 624 et seqq.) and requirements are well summarised by Trow:

“Those who cross the boundaries may secure legitimacy because of social and economic usefulness. These efforts would still have to secure scientific legitimacy if they wanted them to be scientifically acceptable. Those who cross the boundary may gain political support for their academic work and their institutions from those powerful in industry and commerce, as well as governments anxious to encourage such links.” (Trow 2005: 23-24)

Before discussing the issue of legitimacy “such links” will be analysed. The analysis will be done in two steps. As a first step, a typology for knowledge transfer on the sociological micro-, meso- and macro-level will be presented. The typology is retrieved from the data analysis. So are the five types of knowledge production and transfer in humanities and social sciences, which are presented next. In a second step, a theoretical model for framing knowledge transfer will be presented, based on the sociological theory of knowledge society.

The processes of knowledge transfer will be analysed and theoretically discussed using the concept of institutionalisation for the “patterning of actions and meanings” (Whitley 1974b: 71). Institutionalisation is constituted by “the degree of coherence and organisation of actions and perceptions and the extent to which ideas are articulated and adhered” (ibid.). According to Whitley two types of institutionalisation in science exist in general: the cognitive and the social. His concerns are the

“different modes of connection between these two aspects. Scientists are social beings and science is a social activity and scientific understanding is an expression of that activity. In distinguishing cognitive institutionalization and social institutionalization, I am suggesting it is fruitful to analyse the differences in the extent of coherence and cohesion between intellectual products, their mode of production, evaluation and revision.” (ibid.)

Whitley defines two related aspects for cognitive institutionalisation: “First, it refers to the degree of consensus and clarity of formulation, criteria of problem relevance, definition and acceptability of solutions as well as the appropriate techniques used and instrumentation. Second, it defines the activity of a scientist in terms of the consensus.” (ibid: 72) Also for social institutionalisation two dimensions are defined by Whitley: “first, the degree of internal organization and boundary definition and second, the degree of integration into the prevailing social structures of legitimation and resource allocation.” (ibid.) For Whitley institutionalisation is a sequential process. First cognitive consensus is sought. Then, second, social institutionalisation can be established. Both can be achieved inside the academic community and its peer-review system and outside in wider society as well: “there is no necessary correlation between the degree of cognitive and social institutionalization as the synthesizing and systematization of a cognitive framework may take place without extensive social coordination” (ibid: 76). The following quotation further emphasises what Whitley considers as

social drivers of science: “Formalization of an activity into the currently legitimate modes of social organization is only likely after a substantial degree of cognitive and social institutionalization has been achieved unless dominant sources of funds and legitimation insist on promoting a particular field.” (ibid.)

Analysing the social institutionalisation and formalisation of knowledge production of cooperations focussing on knowledge transfer presented in section five three types of interdependent cooperations focussing on knowledge transfer are identified: from scientist to scientist(s), e.g. at University of Kassel or from other higher education institutions; from scientist to a public entity, e.g. government or museum; and, from scientist to a private entity, e.g. business firms or industry, scientists in private research institutes. Theoretically a fourth type of cooperation from scientist to a public-private-partnership can be added.

Table 14 Four Types of Interdependent Cooperations focussing on Knowledge Transfer in Public¹³ Higher Education

	Micro/Individual Level	Meso/Organisational Level	Macro/System Level
Type 1	Scientist ↔ Scientist(s)		Public ↔ Public
Type 2	Scientist ↔	Public Entity	Public ↔ Public
Type 3	Scientist ↔	Private Entity	Public ↔ Private
Type 4	Scientist ↔	Public-Private-Partnership	Public ↔ Private

Source: Christian Schneijderberg

The system level addresses the sponsorship and ownership of higher education institutions and related to this the basic funding of research and teaching. Therefore it is independent from the setting, e.g. cooperation, of production and transfer of knowledge. The four types of interdependent cooperations focussing on transfer of knowledge are ideal types. In reality only a certain percentage of bi-lateral cooperations exist. In this enquiry one fifth of all cooperations were with only one partner (see table 9). Cooperations focussing on transfer of knowledge with more than one partner can involve partners from different types. This can result in a multi-lateral and interdependent mix of the four types. Due to the design of this enquiry the scientist is the initial point for cooperations on the individual level. On the individual level the scientist can be replaced by higher education institution as an organisation or a unit of research or teaching, depending on the focus of enquiry.

Results from organisational studies on the asymmetrical distribution of power (Coleman 1982; Ortmann 1988) and different inherent pattern variables (Parsons and Shils 1962: 77) among the three levels can become great challenges. Especially the cooperation of an individual actor, e.g. a professor, with a collective actor, e.g. a museum or enterprise, is considered as vulnerable and should be addressed in further research. Also different (organisational) cultures, bureaucracy or changing contact persons heighten uncertainty, risk

¹³ Of course, private higher education and scientist working in private higher education institutions would require a modification of the presented typology and model.

and transaction costs for the individual professor involved in a cooperation focussing on knowledge transfer (Mora et al. 2010; Schneijderberg and Teichler 2010).

A second issue of institutionalisation and formalisation of knowledge production and transfer are identifying distinct patterns and categories to generate a typology for cooperations focussing on knowledge transfer in the humanities and social sciences. Of major importance for determining the typology were the two aspects of logic of science and funding. Both aspects are kept rather abstract in the following typology on purpose. In the interviews the aspect of funding of cooperations had two major conflicting implications. First, the inclination of the scientists' partners to fund the cooperation was rather low. This was reported to be the case in many cooperations and rather independent of the macro/systems level of knowledge transfer from public to public or public to private. Almost all interviewees reported that many partners from the public realm, e.g. museums, are underfunded as well; and, some private enterprise asked for funding of cooperation rebuke on them paying taxes. Second, professors do get involved for several reasons, e.g. curiosity, intention to gather data for a follow-up project or getting students involved. Consequently the issue of funding is addressed rather coarsely or left open. The aspect scientific logic is an interpretation and aggregation of issues of freedom of research and teaching. This refers to discussion about the degree of autonomy by professors in the interdependent setting of cooperation. The scientific logic also acknowledges that knowledge transfer is considered implicit part of research and teaching; and that interviewees refused the idea of a separation in basic/theoretically-oriented and applied/practically-oriented as a general principle of classifying research in the humanities and social sciences. From the content analysis of the interviews and questionnaire five types of cooperations focussing on knowledge transfer are retrieved:

Table 13 Five Types of Knowledge Transfer in Humanities and Social Sciences

Type 1	<i>Public Knowledge Transfer.</i> Cooperations or projects are determined by scientific logic. Funding is provided by state/university or research funding agencies.
Type 2	<i>Corporate Knowledge Transfer.</i> Cooperations or projects are determined by scientific logic. Funding is provided by individual or organisational funders from social, cultural, and economic practice.
Type 3	<i>Expertise Knowledge Transfer.</i> Any kind of problem-oriented compilation of knowledge commissioned by individuals or organisations of social, cultural, and economic practice.
Type 4	<i>Input Knowledge Transfer.</i> Any kind of discussion with exponents of science, social, cultural, and economic practice in both formal settings, e.g. conferences or official meetings, and informal settings.
Type 5	<i>Consultation Knowledge Transfer.</i> Explicit consultation or advisory activity on commission.

Source: Christian Schneijderberg

It is most likely that the five types are not exhaustive. For the moment they are designed to serve as basic patterns for analysing knowledge production and transfer in humanities and social sciences.

7 Perspectives

Knowledge production and transfer understood as a cognitive and social process generate new challenges for universities (Etzkowitz et al. 2000; Laredo 2003; Bleiklie 2005; Owen-Smith 2005; Wilkesmann 2008), due to a steady process of environmental change. This is also a challenge for academic disciplines classified as soft sciences (Storer 1967; Biglan 1973a, 1973b). Another classification scheme was introduced by Kolb (1981). Analysing learning styles and disciplinary differences Kolb classified information processing as active versus reflective and how information is perceived as abstract versus concrete.¹⁴ Knowledge production in humanities and social sciences would be situated in the quadrants reflective-concrete (humanities important) and reflective-abstract (mathematics important). The mix of soft, reflective and abstract/concrete – plus the both pure/theoretically-oriented and applied/practically-oriented (see section 4.2) – way of knowledge production in humanities and social sciences cause a high degree of “technical task uncertainty” and “strategic uncertainty” (Whitley 1984: 126). Both have considerable influence on the production, coordination and (quality) control of research in humanities and social sciences (ibid: 126-129). Weingart suggests that

„economic, political and social criteria of relevance (which means something different in each case) are being applied in *addition* to scientific criteria of quality, and that they have a closer bearing on the research process than has previously been the case. This happens *seriatim*, and in different ways depending on the area of knowledge.“ (Weingart 1997: 604)

Merton formulated the basic issue as dealing with “the modes of interplay between society, culture and science[s]” (Merton 1973: 175) “The institutionalization process of science” Weingart writes “represents the transfer mechanisms through which ‘external’ social influences are translated into cognitive developments and these, in turn, are translated into society” (Weingart 1974: 56). As a consequence “science has to be regarded as an ‘intervening variable’, i.e. organization, structures, cognitive orientations and mechanisms” (ibid.). Science as an intervening variable has become of great importance in the sociological theory of knowledge society (Bell 1973, Stehr 1994). The static definition of knowledge by Bell was extended for sociological analysis of knowledge society by Stehr (1994). Stehr defines knowledge as

“‘the capacity to act’, as the potential to ‘start something going’ and therefore as a model for reality. Thus, scientific or technical knowledge is primarily nothing else but the ability to act. The privileged status of scientific and technical knowledge in modern society is derived not from the fact that scientific discoveries are generally considered to be credible, objective, in conformity with reality or even indisputable; but rather from the fact that this form of knowledge, more than any other, creates new opportunities for action incessantly.” (Stehr 2007: 143)

Knowledge as individual or collective capacity to act sets the focus on the cognitive and social process of institutionalisation. The cognitive and social institutionalisation of science is not the search for truth but facilitating the incremental capacity for social action. As indicated

¹⁴ Nagel (1962: 15-28) has well explained the difference between common sense and the systematic methodology of science.

above issues of profession and organisation need to be addressed when further researching knowledge production and transfer in humanities and social sciences.

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