

“Academic career practices”

Draft version

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1. Introduction

Less attractive employment and working conditions compared to other academic systems (brain drain), higher attractiveness of employment and working conditions outside academia (opting out by graduates and academics), and declining interests in academia because of less social rewards of being an academic (less graduates stay in academia) are named as reasons for the diminishing capacity of academia to attract and bind human resources. This raises the question if academic systems are adequately designed in terms of their labour market and career structures, and if different structures in national higher education settings are likely to show a different performance in respect of the adequate design of their labour market and career structures.

As Enders/de Weert (in print) show, policy debates about changes in designing academic labour markets and career structures are widely spread around in Europe. The introduction or the abolishing of specific institutional settings (like the Habilitation as additional proof of qualification) are connected with specific assumptions about the functionality of these new or old rules. As sceptical observer, we ask if these institutions work as they are proposed to do.

Therefore my leading research questions are: What are particular formal and informal institutions influencing academics' career practices and in what ways are overlapping and possibly conflicting institutions linked to career practices at different stages in the academics' professional life course?

2. Theoretical framework

An investigation into which institutions are actually at work in specific academic labour markets and career structures need to look at both, the social structures of academic careers and career practices of academics. An investigation which picks out either social structures or human agency will fail to explain the structural influence on career practices and differences in career practices.

This paper argues that a neo-institutional approach and its several characteristics make it possible to overcome earlier shortcomings and allow for a stronger analysis of the link between career

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related social structures and human agency. Founded mainly by researchers of organizational sociology² rather than classical institutional theory, neo-institutionalism has been employed by a wide range of disciplines, including economists, sociologists and political scientists³.

The main advantage of neo-institutional approaches is that they attempt to describe human behaviour not as determined by social structures but as *shaped or governed* by social structures that are also results of (collective) human agency.⁴ Furthermore, social structures enable humans to act but to act within a situation-specific room for manoeuvre which is given by rules and resources. Rules inform agents about the range of actions expected, accepted and legitimized in a specific situation. In this paper systems of (formal and informal) rules are defined as institutions⁵. Importantly, belief systems and actions are not integrated into this definition. It is this narrowing that allows us to also account for human agency and offers the opportunity, “to conceptualize institutions not only as being subject to evolutionary change, but also as formed as purposeful actions” (Gläser 2001: 701). Whereas formal and informal rules brief actors about their own expected actions of those of others, human and non-human resources enable individuals to act with specific power in accordance with or against the rules, hence, rules and resources mutually affect each other. The “activation of material things as resources, the determination of their value and social power, is dependent on the cultural schemas (*or rules*) that inform their social use” (Sewell 1992: 12; italic phrase added by authors) as well as rules are effects of resources.

Another rationale for using a neo-institutional approach is that such an approach regards individuals as “knowledgeable” (Giddens 1984) about the rules and resources at a specific time but not as fully informed about all existing rules and available resources. Neo-institutionalists argue that institutions can only be effective when they are known and perceived by humans. An essential argument for human agency within social structures is that institutions are conflicting and overlapping. This ambiguity and diffuseness of institutions allows individuals not to act according to specific rules; they are not only able to adjust their actions according to new

2 Cf. Meyer/Rowan 1977, Zucker 1977.

3 Cf. Williamson 1975, North 1989 for economics, Meyer/Rowan 1977, Zucker 1977, DiMaggio/Powell 1983 for organizational sociology, March/Olsen 1984, Ostrom et.al. 1994, Scharpf 1997 for political science. Unfortunately, nearly each researcher has his/her own definition of institutions. Consequently, researcher try to categorise the different neo-institutional approaches by their definition of institutions. Cf. Scott {1995} 2001, Hall/Taylor 1996, Trommel/van der Veen 1997, Keman 1997.

4 The following view on neo-institutionalism is inspired by the articles of Cohen 1989, Sewell 1992, Keman 1997, Trommel/van der Veen 1997, Barley/Tolbert 1997, Walgenbach 1999a, Walgenbach 1999b, Hasse/Krücken 2000a, Hasse/Krücken 2000b, Gläser 2001, Beckert 2002.

5 Organisations are excluded from this definition of institutions because they have their own material existence which embody institutions. “In this definition we would, however include not only formal legal rules that are sanctioned by the court system and the machinery of the state but also social norms that actors will generally respect and whose violation will be sanctioned by loss of reputation, social disapproval, withdrawal of cooperation and rewards, or even ostracism” (Scharpf 1997: 38). See also Gläser 2001: 701.

institutional settings but also able to transform their institutional knowledge from one institutional setting into another.

In sum, a neo-institutional framework for explaining career research is supported by 1) empirical research, 2) the ability to analyze social structures, 3) flexibility behavior of individuals, and 4) emphasis on individuals perception of the structural situation as driving force for humans intended actions.

Even though neo-institutional theory allows us to conceptualise the link between social structure and human agency as recursive our interest lies in the influence of social structure *on* human agency rather than the alteration of social structure by (collective) human agency. Whether or not there exists a link between social structures and human agency, as well as the the perceptions of social structures and their transformation into (non-) intended action, is an empirical question. This study want to explore both in the context of careers because they clearly reflect social structures and human agency. Specifically, the careers of academics or faculty members of universities are chosen.

2.1. Neo-institutional framework

As done by other researchers⁶, we analytically separate the analysis of social structure and human agency. Our study is an analysis of the institutional settings and resources in academe. The particular settings we explore are twofold. First, analysis of multiple institutional contexts in which academics simultaneously act helps to identify the specific institutional setting in which academics act. Second, labour market theory and career theory helps us to analyse mechanisms of academic labour markets and career structures. The analysis of the overlapping institutional contexts in academe suggests that labour market and career theory needs to be adjusted because of the differences in academe relative to other sectors.

The analysis of human agency involves the investigation of academics' knowledge about, and perception of, career-related social structures in academe as well as personal career-related aspirations and motivations. It also involves the exploration of academics' career practices. The reconstruction of academics' knowledgeability, perceptions, aspirations and motivations⁷ is crucial for linking career-related social structures with academics' career practices. Only with this reconstruction can we know which of the existing rules and available resources shape academics' career actions⁸. The exploration of academics' career practices means identifying subjective and

6 Cf. Archer 1982, Giddens 1984, Barley/Tolbert 1997.

7 The knowledgeability, perceptions, aspirations and motivations are governed by the relative position of a human in the social field. Cf. Bourdieu 1986.

8 We argue similar to the following statement of Barley and Tolbert: "Information on actors' interpretations is crucial for assessing whether they consciously consider alternative courses of action and the costs and benefits

objective aspects and the wide range of activities that are connected to both types. Objective careers include exemplary, “identifiable positions, offices, statuses, and situations that served as landmarks for gauging a person's movement through the social milieu” (Barley 1989: 49). Subjective careers include subjective career development experiences such as meanings attributed to the career and definitions of specific career-related situations.

3. Overlapping institutional contexts in Academe

Several particular conditions of academic labour markets and careers need to be considered, including the scientific, societal and higher educational contexts⁹. Whereas the societal and the higher educational contexts are shaped mostly by national settings, the scientific context is related to more cosmopolitan characteristics. These overlapping contexts yield specific institutions which are shaping academic working conditions, work roles, career stages and expectations. “Career problem's complexity is caused by the fact that scientists act simultaneously in several social contexts” (Gläser 2001: 700).

Knowledge production both the primary academic task and performance indicator, is organized within the science system. Over the centuries the science system distinguished between disciplines and sub-disciplines. Knowledge production itself is done within these specialties by formulating research problems, selecting methods and evaluating results. This procedure depends on “what scientist's colleagues all over the world are doing” (Gläser 2001: 702). The rewards academics receive are mainly given by the science system. Reputation is the foremost reward as competition is organized around formal and informal evaluations of productivity relative to peers. Reputation and prestige become indirect indicators of academic performance and form the basis for academics' social stratification within a given speciality. In other words, reputation and prestige are outcomes and sources of knowledge production. But reputation is a fluent medium which could be lost because it is vague and uncertain¹⁰. Advancing knowledge is done within a highly competitive environment because the scientific community/specialty tends to award mainly those academics who are the first to communicate new knowledge. Stephan calls that, “the importance of priority in scientific discovery” (Stephan 1996: 1201). Important for the study of academics' careers as organizational men is that the specialities are signals for employers because vacant positions tend to be offered for a specific specialization.

associated with such choices. Such information can help researchers avoid erroneously interpreting behaviour in structurally-deterministic ways and better assess the role of agency” (Barley/Tolbert 1997: 105).

9 Cf. Enders 1996: 19-21.

10 Cf. Enders 1996: 52.

Academic work and carers are also influenced by societal institutions that form institutionalised patterns of life courses or career trajectories and reflect, “the institutionalized patterns of life course and are included in a system of social stratification” (Gläser 2001: 704). Systems of education and certification, employment and social security institutionalise academic work roles and careers in specific ways. National labour markets set specific conditions like earnings, employment regulations and positions available outside academe. The societal context also defines to what extent certain organisations are responsible for research and teaching, or both, the funding of academic organizations and further conditions for research and teaching. Clearly, the institutionalised science system mostly formed by informal rules and the societal context of education, employment and social stratification provides overlapping contexts that govern academics’ careers. For example, by directing financial and material resources for academic work that may or may not be directed by political preferences, society enables, collective and individual participation in knowledge production. Knowledge production is at the same time influenced by informal institutions of priority setting and judgement of peers in the ongoing scientific agenda setting and review process.

In addition, the institutions that govern academic carers can be applied to the organizational sub-setting of the higher education system that provides further important rules and regulations about tasks and qualification requirements, work roles and working conditions, staff structures and career ladders. Formal organizations’ institutional frameworks of a given higher education system define intra-organizational and intra-organizational mobility and mediates resources or expectations about academics’ academic contribution and performance. In short, academic organisations are the employers of academics and provide the jobs for professional academic work. Individual organizations may possess specific grades of freedom in defining work roles, setting working conditions, and designing its internal staff structure and promotion ladder.

3.1. Academic labour markets and career structures

The effects of the specific academic conditions could be shown in an analysis of academic labour markets. Such an analysis would also deliver insight into the similarities and differences between public and private markets. According to Sørensen¹¹, academics and their employers do not only exchange labour power for wages, benefits, and rewards but also exchange prestige and expectations as regards its future development.¹² One reason for this prestige seeking of academic organisations is that the property rights of the labour input are assigned to the employee – and only indirectly over the employee to the employer.

11 Cf. Sørensen 1992.

12 Another mechanism in academia is that the prestige of the organization adheres to academics.

Academic labour markets could thus be seen as internal labour markets because they do not allocate positions only by (external) market mechanisms. They develop, however, relatively flat firm internal labour markets¹³. Academic organisations invest little in in-house training for their own internal labour market and often recruit externally to non-entry positions¹⁴. In contrast to internal labour market theory, high mobility and fluctuation on positions are seen as an innovative feature and not as an inefficient one in academe¹⁵. Academic labour markets thus share certain characteristics of occupational or professional labour markets. They are characterised by small performance units, high responsibility, flat hierarchies and a high level of qualifications¹⁶.

Yet they are also internally highly fragmented. This reflects the fragmentation of the science system in disciplines and specialities. Usually, the organizational context defines the availability of positions and decision-making processes when it comes to filling vacant positions. However, allocation decisions are handed over to these specialities.

Although the organisation employs academics, the decision about who matches a position is not only done by the organisational administration. As a part of the academic self-steering, academics themselves become the main authority in the process. They decide if an academic fits into a position by reviewing the applicants' scientific standing and past performance. This process contains a high degree of uncertainty about future performance because criteria and standards are vague, fluent and a result of inter-subjective consensus¹⁷.

Complementary to occupational internal labour markets is that the opportunity to enter positions is connected to licences or degrees given by other professionals. Academics, working either in the faculty/department or in the specialty where the applicant is engaged, determine the success in obtaining credentials. In many systems career stages and promotion opportunities are connected to these licences. Moreover, positions are often connected to a specific career stages. The expectation is that a specific credential will be obtained at a certain stage that offers a formal entrance ticket to further career stages. Graduation¹⁸ is the first requirement for entering academe. In general, the dissertation is the first stage of the academic training¹⁹. In the post-doctoral stage,

13 Cf. Sørensen 1992, Enders 1996, Gläser 2001.

14 Cf. Gläser 2001: 708.

15 Job mobility between scientific fields and organisations is also cognitive mobility. Academics receive tacit knowledge from colleagues and transfer knowledge to them as well. These “cognitive careers provide the ground for scientific innovations” (Gläser 2001: 702).

16 Cf. Enders 1996: 50. Similarities between the organisation of professions and the organisation of academia is shown by Mintzberg (1983) 2001).

17 Cf. Enders 1996: 48-49.

18 Here, graduation is defined as the achievement of a Master or Diploma degree.

19 As an exception, in the United Kingdom (UK) non-Ph.D. holders can gain academic positions as well. But less academics in the UK are non-Ph.D. Holders. Cf. Fulton/Holland 2001: 313.

an academic has to meet demands to obtain the informal or formal credential for getting a tenured position.

In general academic tasks are similar across career stages. Consequently, the skills required are also similar but unlikely differ between disciplines and specialities. According to Gläser²⁰, the career stages vary in their sets of work roles. Dalton, Thompson and Price²¹ distinguish between roles of an apprentice, a colleague, a mentor, and a sponsor²². Doctoral students are apprentices. Academics, “who have acquired sufficient knowledge and experience to design their work independently” (Gläser 2001: 703) are considered colleagues. Mentors are responsible for younger colleagues because they have obtained sufficient reputation. Academics who can sway a specialties scientific direction are in a sponsor role.

Thus, academic labour markets tend to create a specific mix of open and closed positions. Non-tenure positions are generally open as academics work on short- or mid-term contracts from which they can be easily dismissed. In consequence, the positions have to be filled by another person and the allocation process continues again.

In contrast tenured positions represent relatively closed positions from the point of view of the employee and employer. The special meaning of tenure in academia lies in autonomous work conditions coupled with poor opportunities for employers to monitor productivity, resulting in a high degree of job security. These uncertainties for the employers to judge academic performance²³ lead to a long probation time which is successfully finished by getting a tenured position, hence it is the high point for many academics. Because the long probation time and the uncertainty of becoming tenured makes academic career risky²⁴ such positions are very appealing by offering permanent positions²⁵.

This tour de raison on academic labour markets has provided insights on some of the specific characteristics that one must take into account when analysing academic career practices within academic labour market and career systems. Different academic systems have, however, found different solutions that try to take these conditions into account. These different incentive structures create different staff structures and career ladders as well as mechanisms of vacancy competition. The solutions affect not only the staff structure and career system but also 1) the design and length of training, 2) the length of probation times, 3) the point in time of the decision

20 Cf. Gläser 2001: 703.

21 Cf. Dalton et.al. 1977.

22 Cf. Dalton et.al. 1977: 22-23.

23 Cf. Enders 1996: 51.

24 Cf. Enders 1996: 11.

25 Cf. Gläser 2001: 706.

about obtaining a permanent position, 4) the number of career events, 5) the mechanisms which are chosen for job mobility, and 6) the mechanisms which encourage external (vacancy) competition²⁶.

In an overview, Enders distinguishes between two ideal-types of staff structure: “the chair model and the department-college model” (Enders 2001: 12). Whereas the chair model rigorously distinguishes between the tenured professorial core and a large number of untenured staff, the department-college model is characterized by a lower organizational hierarchy in which the status separation, “is dependent upon publicly acknowledged qualifications and expertise” (Enders 2001: 12). Enders also describes three career systems: contract, regular employee and tenure systems²⁷. These systems are argued to structure the career line of each academic because their ranks, schedules of career decisions and relative position within academia are unique in each system. The contract career system is characterized through a long period of contract employment. That means that the decision over a tenured position – then mostly a chair – comes late in the career line. A prime example of this is the German academic system. The British academic system is a prime example of the regular employee career system. This includes a relatively early decision about tenure status. After this decision, in contrast to the contract model, academics go through hierarchical stages. The tenure-track system could be described as a mixture of the two. An academic can get a so-called tenure-track position relatively early, in which they are given time to show colleagues that they are good enough to obtain a tenured position. The U.S. university system is a prime example.

Certainly, other employment forms are established in addition to these characteristic career systems. In Europe, Enders sums up that a “growing number of academic staff is excluded from regular staff structures” (Enders 2001: 13). A comparable situation is observed in the U.S. (Gappa 2002). In both cases there are two affected groups: on the one side a rising group of untenured teachers and on the other side a growing amount of externally financed contracted researchers who remain outside the traditional career systems.

4. Career practices of academics

The previous sections offered a neo-institutionalist framework for linking career-related social structures and peoples career practices. The paper explored the overlapping institutional contexts of academia and described the functioning of academic labour markets and careers in terms of internal labour market and career theory. This section presents the subjective side of academic

26 Cf. Enders 1996: 52.

27 Cf. Enders 2001: 12.

careers by reviewing previous empirical studies²⁸. Furthermore, we present hypotheses about career practices of academics which could lead to further empirical research.

Academic careers unfold in a highly institutionalized and scarcely fully informed environment. We want to know how academics deal with these overlapping and probably conflicting institutional settings and which institutions or sets of institutions guide their career practices.

Career practices is a broad term that has yet to be defined. In our approach positional and job change, internationality, grants and fellowships, licences and degrees, and (status of) membership in scientific associations all represent objective measures of academic careers. In contrast subjective careers involve meanings attributed to the career and definitions of specific career-related situations. These meanings and definitions are reflected by academics' priority setting (regarding the division of tasks in teaching, research and administration), the work-life-balance, and the career goal setting. Science-oriented career practices we regarded here are those academics' employability by building a specific portfolio of knowledge, skills and experiences. Such practices include the selection of the universities as both employer and collegial environment, of the mentor and of the networks, the process of networking, the amount and kind of publications, the attendance of conferences and workshops, the organization of conferences and workshops, (inter-) national co-operation in projects, the experiences in teaching, and, finally the selection of the problem regarding its position in a niche or in the mainstream.

The empirical studies all use different analytical approaches to look at academic careers. We present results of the more recent empirical studies and give emphasis to the links between institutional settings and academics practices.

Stephan and Levin²⁹ describe the importance of being at the right place at the right time. They see scientists' luck³⁰ as twofold: First, the research university in which a scientist is trained is important for the available resources and equipment as well as the stimulating colleagues. If scientific change is in the air and the research group is involved in this change, then the scientist potentially becomes part of this change – and possibly better changes for a career. Second, the job market after the research training is obtained is equally important. No jobs, no career. The job market problem regularly affects whole cohorts of scientists. Stephan and Levin observe an increased competition for both grants and jobs. Obtaining grants is often necessary to jobs requiring as much publications as possible. According to Stephan and Levin, this possibly leads

28 All presented studies address the issue of academic careers directly and explore career practices. The selected studies are: Stephan/Levin 1992, Sonnert 1995, Matthies et.al. 2001, Beaufays 2003.

29 Cf. Stephan/Levin 1992.

30 This study “is restricted to the physical, earth, and life sciences, with occasional references to mathematics and engineering” (Stephan/Levin 1992: 7).

to more short, faulty and not well-thought-out papers and sometimes to misconduct and fraud. Not the only shortcomings evident in increasingly competitive environments there also seems to be less, “willingness and ability to undertake risky projects” (Hackett 1990: 264 cited from Stephan/Levin 1992: 162). Greater competition also makes careers in science less attractive to promising students. On the level of motivation for scientific work, the authors see scientists motivated by the opportunity to solve problems, to receive recognition and to make money. In sum, Stephan and Levin consider the science system and the job market as the two main institutional contexts for scientists careers and academics' career practices are mainly driven by the science system.

Gerhard Sonnert with the assistance of Gerald Holton³¹ investigate the success factors in academic careers³², though their main focus is on gender differences. The study concentrates on the subjective side of academic careers and indirectly explores the institutional dimensions. They emphasise the importance of motivation and ambition for the career paths. Strong ambition and motivation are regarded to lead to more likely to arrow-like career pathways, whereas less ambition and motivation generates more spiral-like careers with detours, stops or partial backsliding. Sonnert and Holton's findings indicate that luck is a crucial force in governing academic careers and consist of two factors. One, scientific creativity (risk in specific topics and methods) leads to success if the idea turns out well. Second, being at the right time and at the right place in order to make the right decision is often mentioned in the connection of meeting the right people such as a sponsor or mentor. But meeting the right people is not only luck, it is also to take advantages and to be initiative. Sonnert and Holton suggest the following factors for career success. First, the choice of institution which contains not only prestige but also the stimulating atmosphere within the research unit. Second, the choice of research topics and fields which may pay off because they are of growing importance. Third, the publication of research results shows the productivity of someone which is an essential measurement in science. Fourth, mentors not only open doors, they also stimulate someone's work and interests in specific fields. Fifth, the political game is important at the stage of the tenure decision where not only merit plays a role, but also the relationship to the decision-makers. Sixth, networking enhances the chances of a successful career by being visible for a wider group of colleagues in the same field and to be part of the informal network of contacts and information flows. Finally, hard work seems to be more important than intelligence; it is “the ability to transfer intellectual excitement into long hours of routine work and attention to detail” (Sonnert 1995: 175).

31 Cf. Sonnert 1995.

32 Their sample of academics is again disciplinary focused on biology, physical sciences, mathematics and engineering with a minor sample of social scientists. Cf. Sonnert 1995: 197-205.

A group of female social scientists at the Social Science Research Center in Berlin³³ looked into careers and barriers in public non-university research centers with a special focus on gender differences. This study emphasised the dimension of the organisational level in enabling and restricting academic careers. One major assertion was that differences in the career aspirations of academics and the career options given by an academic system lowers the rate of female scientists and researchers because women are less compared to men willing to change their professional self-conception in order to fit into the strict rules of academia. Main factors which make academe unattractive include the riskiness of academic careers because of low internal labour markets and marginal amount of tenured positions, academia as way-of-life, which emphasises work more than life in the work-life-balance, the contradictoriness of academic profession and family, and the necessity of networks driven by informal recruiting practices. The study also draws connections between the internal governance of the organization and academics' ability to develop knowledge, skills and experiences. Organizational environments within a system of 'hierarchical contract steering' limit the development of individual potentials and the accumulation of know-how whereas environments with a system of 'institutionalized self-steering' offer academics extensive room to manoeuvre. This enables them to develop more knowledge, skills and experiences.

Beaufaÿs³⁴ studied how people became scientists and researcher³⁵ in her doctoral thesis. Similar to Engler, she constructed academe as a social field in which science and research is done and also determines academics career practices. She observes specific buildings, social forms of organisation, work locations and time structures, in which historical and biotechnological research takes place. The differences in the disciplines shape different career practices, especially regarding collaboration within the institute and the usage of time and equipment. In terms of career success, the study mainly refers to the institutions of the science system such as the criteria for performance and the practices of recognition. In sum, scientists and research act differently reflecting their specific scientific field but their behaviour is coherent with that field and if it is slightly different, it is caused by their relative position within the field as outsiders.

As the empirical studies suggest, the main institutional settings for academic careers are the science system, the labour market and the organizational environment. Most emphasis is laid on the mechanisms of the science system which contain mainly recognition of academics' scientific work as well as the importance of networks and mentors. The labour market plays a role in terms of availability of academic jobs. The organisational environment offers stimulating colleagues,

33 Cf. Matthies et.al. 2001.

34 Cf. Beaufaÿs 2003.

35 In her focus lie history and biotechnology as disciplines.

up-to-date resources in terms of information and equipment as well as opportunities to develop career-related knowledge, skills and experiences.

In terms of academics' career practices, these studies present academics as mainly adapting to their scientific environment. As Beaufaÿs suggests, academics adjust their practices in order to play the scientific game. Matthies *et.al.* emphasise the adjustment of academics to their environments as well, but mention also practices which lead to the development of career-related knowledge, skills and experiences. Stephan and Levin observe that the more competitive environment in obtaining academic jobs leads to misconduct and fraud in research as well as grant and fellowship seeking and on quantitative aspects reduced publishing practices. As successful career practices, Sonnert and Holton recommend hard work, the right choice of institution, colleagues, mentors and publication strategies, as well as networking.

These results imply that career-related human agency is concentrated on science-related career practices. Furthermore, the emphasis on luck and serendipity as important factors for academic careers means that uncontrollable forces play a role. These forces are partially interconnected with the science system, such as the choice of topic and mentor, but depend also on societal factors such as amount of open positions and funding opportunities. Academic career practices change if the social game of academia changes. This finding suggests that science-oriented career practices should vary in different countries, disciplines and organizations because all three affect the rules of the academic game.

The objective side of career practices are the results of decisions and conditions. Professional, societal and organizational rules enable or restrict specific pattern of objective career practices. The first hypothesis is that societal institutions such as designs of career ladders are more influential on objective career practices than professional or organizational institutions.

The subjective side of career practices influences academics' decision for further employment in academe and the likelihood of adjustments towards fitting in the acknowledged scientific rules of the game. The second hypotheses is that all three institutional contexts influence the subjective side of career practices.

Disciplines and specialties organize the social field of academe by offering a platform for scientific exchange. The specific disciplinary and speciality-related rules govern the science-related career practices of academics. The third hypothesis is that the science system has the strongest influence on these career practices.

5. Methodology

These three hypotheses need to be further empirically investigated. They point to an empirical study that tries to explore the importance of the science system, the societal institutions and the higher education system at different career stages. From the labour market and career research perspective, it is worthwhile to take countries into account which differ in terms of their academic labour markets and career ladders. Especially, the organisation of the career ladder with the point in time when the tenure decision comes distinguishes academics in their social status which affects career mobility and employment security. Criteria for selecting the different disciplines include various rules in the organization of academic work such as collaboration in teams or more individualistic approach of knowledge production. Those differences govern the opportunities for the development of career-related knowledge, skills and experiences. The same holds for the selection of organizations which central and peripheral position within the science system possibly alter the career-related motivations, ambitions and aspirations of academics.

5.1. Selection of empirical foundations

Three types of empirical material will be used by this study:

1. The institutional embeddedness of academic labour markets and careers forms the basis of this study. It contains data that inform about the formal and informal rules that govern academic labour markets and careers in the selected settings. Therefore, the legal framework of academic labour markets and careers, structural data about academic systems, disciplines, and career pathways will be gathered by document and secondary literature analysis. This institutional analysis should span a considerable time frame of three decades in order to address change and stability over time that may or may not affect the institutional contexts within academics act within a given system.
2. As part of the institutional setting, the faculty demographics of an academic system and of the disciplines describe empirically certain aspects of academic labour markets such as positional hierarchies. The secondary analysis of the faculty demographics is needed for a comparison of the academic systems and disciplines. The secondary analysis of academic career trajectories on the national and the disciplinary level deliver insights into the objective careers on an aggregated level. Statistics and large scale surveys will be applied for both analyses.
3. Career practices unfold in a relation between objective and subjective careers as well as individual premises. Qualitative interviews offer the opportunity to gather information about the subjective careers and the individual premises. The analysis of curriculum vitae deliver

insights into the objective careers of the interviewees. The interviews can help to light up some critical issues which are seen in the objective careers.

5.2. Selection of the sample

For the comparison of academic systems, the United States of America (USA), Germany (Ger) and the United Kingdom (UK) are selected because they represent different career models identified earlier.

The selection of the disciplines is oriented to their differences in organizing the disciplinary knowledge production. Physics is chosen as a discipline in which knowledge production is mainly done in teams and as a discipline in which scientific work is organized more individually history is chosen. Additionally, both disciplines are well-established in each country over a long period.

For reasons of reducing the risk to meet a specific organizational culture, this study explores two types of universities in each country which should have also a different level of prestige³⁶. One university should be rewarded as central in its discipline and one university should be more peripheral in the discipline.

The study includes two different cohorts. The first cohort are tenured senior academics who are older than the age of 55 years. This group, usually professors, has gone a long pathway in academia. They can offer insights into practices in the beginning, in mid-career after being tenured, and practices which occur after being full-professor. The second cohort is composed of un-tenured junior staff or middle-rank academics younger than 40 years (usually post-doctorates). This cohort is in the middle of their career development. Problematic is that interviewees often try to rationalise their actions afterwards (ex-post rationalisations). The two cohorts are chosen for mutual control of the results. Additionally, both can give insights into the changes in academic careers over time.

If possible, the study includes both gender with a reasonable amount into the sample because gender-oriented studies in academic careers suggest that career practices differ between the gender.

³⁶ Departmental differences within universities could make it worthwhile to choose different two universities for each discipline in each country. Hermanowicz (2003) showed that this has a great impact on the individuals' perceptions of his/her work.

The sample size of both cohorts is four interviewees in each country, discipline and university.

The following matrix presents the sample size:

	<i>Professors Ger</i>	<i>Professors UK</i>	<i>Professors USA</i>	<i>Total</i>	<i>Post- Docs Ger</i>	<i>Post- Docs UK</i>	<i>Post- Docs USA</i>	<i>Total</i>
Physics, University I	4	4	4	12	4	4	4	12
Physics, University II	4	4	4	12	4	4	4	12
History, University I	4	4	4	12	4	4	4	12
History, University II	4	4	4	12	4	4	4	12
Total	<i>16</i>	<i>16</i>	<i>16</i>	48	<i>16</i>	<i>16</i>	<i>16</i>	48

6. Work steps

In advance of the field work, a further elaboration of the theoretical background is needed to build a framework of how to analyse academic career structures and labour markets, and academic career practices. In this step, the neo-institutionalism framework has to be expressed more extensively. Additionally, more major concepts of labour market and career research will be studied and their applicability to the field of academic labour market will be expressed furthermore. This will serve at the same time as a means to develop a framework of analysis of the major dimensions and variables to be addressed in the comparative study of academic labour market and career systems in the countries and disciplines chosen for this study.

The process of the field work is oriented on the structure of the sub-questions mentioned in the problem statement.

In the first part of the field work, documents and secondary literature will be gathered for analysing the three countries and the two disciplines. As a second step in this part, country and discipline reports should be written as frames for further analysis. In the end, the countries and disciplines should be compared in order to extract commonalities and differences as regards career models and their underlying assumptions.

The analysis of staff structures and career pathways in the countries and disciplines follows as a second part of the field work. Statistics and large scale surveys will be applied to gather information about faculty demographics and aggregated career trajectories in academic systems and disciplines, and to prove the hypotheses on the effects of academic systems and disciplines on career trajectories.

The last part of the field work is differentiated into five steps. In a first step, an interview instrument will be developed according to the theoretical framework. In a second step, this instrument will be pre-tested and eventually revised afterwards. Interview partners will be selected according to the definition of the target group of the interview study described above, and the interview study will be conducted. Empirical findings will be summarized in a matrix that crosses a) the major groups of comparison (country, discipline, career stage) and b) the major dimensions and variables addressed in the hypotheses for further comparison and analyses.

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