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JIR 2012 54: 579

DOI: 10.1177/0022185612454958

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Journal of Industrial Relations

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SAGE Publications Ltd,

Los Angeles, London, New Delhi, Singapore and Washington DC

ISSN 0022-1856, 54(5) 579-595

[DOI: 10.1177/0022185612454958]

How Knowledge Shapes Collective Action: Professionalism, Market Closure and Bureaucracy in the Fields of University and Non-university Research

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Abstract: Knowledge workers are often considered to prefer an individual rather than a collective articulation of their interests. This phenomenon is primarily explained by their individualistic orientation and power derived from possessing scarce knowledge. However, highly skilled work is a very heterogeneous field. In order to understand the diverse experiences of highly skilled employees and their attitudes towards collective action, this article proposes a model based on the juxtaposition of professional and knowledge work that entails three distinct logics of control over knowledge: professionalism, market closure and bureaucracy. The forms of collective action (i.e. intra-group solidarity, inter-group solidarity, no solidarity) are predicted to vary contingent on the prevailing position within a field. The model is illustrated by the example of university and non-university research in Austria. Professional self-control of scientific knowledge has been partly replaced by bureaucratic control of top management. This, in turn, mitigates power derived from professional knowledge. Unlike trade unions, collective action based on inter-group solidarity has been found to become more attractive. In non-university research

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organizations, the prevailing market logic entails employees using expertise or innovation to close a market and, hence, to refrain from acting collectively.

Keywords: *collective action; knowledge work; non-university research; professionalism; university*

Introduction

Since the 1980s, trade union densities have declined in almost all OECD countries, with the exception of Scandinavia (Ebbinghaus and Visser, 2000; OECD, 2010). This trend can be traced back to various causes, two of which will be considered in this article: the first is associated with *structural* labour-market changes towards a service and knowledge economy; the second refers to changes in the *attitudes and orientations* of workers. Both developments are intertwined in so far as current changes in the labour market increase labour flexibility, which then fosters the diffusion of individualistic orientations that undercut traditional forms of union solidarity (Beck, 2000; Valkenburg, 1996; Zoll, 1996).

Knowledge workers belong to an employment group particularly prone to exhibit structural as well as cognitive deviations from previous patterns. This group has widespread dependence on self-employment, contracting and other categories of contingent work (Barley and Kunda, 2004; Kalleberg, 2009; Kunda et al., 2002). Furthermore, knowledge workers are assumed to draw on primary, structural power rather than on associational power (such as provided by trade unions or professional associations) to enhance their interests (Crouch, 1982: 68). Therefore, although knowledge workers will hardly become the most widespread employment group in knowledge economies (Warhurst and Thompson, 2006), they can illustrate a more general trend that deters an organized approach to employment relations (Abel and Pries, 2007; Heidenreich and Töpsch, 1998; Kotthoff and Wagner, 2008; Voss and Pongratz, 1998).

Highly qualified employment is not homogeneous. The divergent experiences of knowledge workers must be disentangled in order to fully understand and respect the complexity of employment relations in highly skilled work (Marks and Scholarios, 2007). With reference to the information technology (IT) industry, Barrett (2005) questions the perception of affluent, upwardly mobile professionals earning high wages and working in modern and enlightened workplaces. Instead, software workers appear to occupy a more precarious position than it once seemed. In evaluating the European Social Survey, D'Art and Turner (2008) found that highly skilled respondents strongly believed that employees need the protection of strong unions. Positive attitudes towards unions remained overwhelmingly dominant irrespective of sectoral location, occupation, autonomy or income satisfaction. Although these findings indicate that knowledge workers both demand and need collective action, it remains unclear under what conditions they tend to organize collectively.

In this article, we propose to structure the heterogeneous field of highly qualified employment by analyzing different strategies to control knowledge.

Based on an ideal-typical distinction between professional and knowledge work, we discern three logics of control over knowledge in the labour process: professionalism, market closure and management. We concentrate on the role of skills and knowledge in determining collective action and emphasize the pivotal role of power derived from either institutional resources or the possession of scarce knowledge in the labour process. Thus, we claim that the propensity of highly skilled workers to organize varies both with individual positions in the labour market and with dominant forms of governance (professionalism, market and management) (Freidson, 2001). These, in turn, provide distinct levels of individual and collective power over knowledge and therefore different needs to draw on associational power. The extent to which the highly skilled control knowledge permanently (by profession), temporarily (through innovation or scarce expertise) or not at all (because of hierarchy) is expected to influence the structure of interest representation and, hence, individual attitudes towards collective action. In this regard, we emphasize both the importance of – historical – power struggles over the control of (knowledge) work resulting in distinct institutions (Freidson, 2001; Streeck, 2011), and rational strategies determining individual preferences regarding collective action (Author A, 2006).

The first part of this article is dedicated to developing our conceptual framework. We start by delineating the concept of knowledge work from other forms of highly skilled work, in particular professions. Thereafter, we present a concept of three ideal-typical logics of control over knowledge and link them to the propensity to engage in collective action. The empirical part of the article investigates two fields of knowledge-intensive work, namely, university and non-university research in Austria. After describing the research methods in the second section, we then present our empirical findings. Finally, we then discuss the theoretical relevance of our findings and draw conclusions.

Conceptual Framework

Professionalism and Knowledge Work

Although some authors use the terms ‘knowledge work’ and ‘professional work’ synonymously (Crouch, 1982, Warhurst and Thompson, 2006), the term ‘knowledge work’, in most contexts, results from references to an epochal change towards a knowledge economy. Both knowledge and professional work draw on abstract theoretical knowledge and exhibit a high degree of job autonomy, intellectual skills and the ability and willingness to learn (Alvesson, 2004; Frenkel et al., 1995; Heidenreich, 2004). However, they differ in terms of their institutional frameworks and their potentials for social closure (Freidson, 2001; Weber, 1980).

More than 50 years ago, Peter F. Drucker introduced the concept of ‘knowledge work’ in order to deal with ‘a new social problem – the integration of the professional men, both specialists and managers, into the organization – which bids fair to become the social question of the twentieth century’ (Drucker, 1959: 62). This concept prefigures the two main contexts where the term

knowledge work has been applied: knowledge management literature on optimizing knowledge-production processes (e.g. Davenport et al., 1996); and sociological literature on the post-industrial society, where a new class of highly skilled workers enters the centre of capitalist production and new forms of knowledge revolutionize economy and society (e.g. Bell, 1973; Castells, 1996).

According to Drucker, the main challenge for the knowledge economy is to apply rational scientific management (developed for 'manual labour') to highly skilled forms of work. This implies that managerial control increasingly replaces professional self-control of knowledge production. While professions seek to add to a common knowledge base, knowledge management simply seeks to effectively market a product. In line with these assumptions, we draw on a definition of *knowledge work as being primarily and explicitly oriented towards producing new economically exploitable knowledge*, irrespective of actual innovation.

Consequently, knowledge work permanently seeks to overcome existing knowledge and primarily involves unknown elements and innovative tasks (Willke, 1998: 161). Thus, professionalism based on accreditation and collective association seems an unlikely route to recognition in a context with permanently changing definitions of relevant knowledge (Fincham, 2006: 27). Professions, in contrast, are perceived by Eliot Freidson (1986: xii) as those 'occupations that have in common credentials testifying to some degree of higher education and . . . exposure to a body of formal knowledge, a professional "discipline"', such as medicine, law or scientific research. For Freidson, professions are occupations with the capacity to create exclusive shelters in the labour market through the monopolization of educational training and credentials required for the attainment of economic opportunities (Brint, 1993: 262). However, knowledge workers (such as management consultants, researchers, software programmers) must use scarce expertise or innovation to exert only incomplete and temporary – if any – control over the knowledge contents of their work.

Different Logics of Control of Knowledge

As indicated earlier, institutions that control knowledge result from social closure (Parkin, 2004: 30; Weber, 1980: 23). According to Max Weber, the notion of social closure refers to the process by which 'social collectivities seek to maximize rewards by restricting access to rewards and opportunities to a limited circle of eligibles' (Parkin, 1979: 44). With regard to work practices, two forms of occupational closure can be distinguished. They refer either to practices based on *practical* knowledge and skills or on *formal* knowledge composed of bodies of information and ideas organized by theories and abstract concepts (Abbott, 1988: 8; Freidson, 2001: 33). Our emphasis is on the latter category of knowledge commonly associated with professions.

However, the position of professions has been seriously weakened in advanced capitalist societies over the last decades and professionalism has been increasingly replaced by market logic (Freidson, 2001). The latter implies

that market prices increasingly govern the supply of, and the demand for, highly skilled work. Although the production of new knowledge may provide a temporary market monopoly, new market entrants soon challenge this position. Third parties cannot be permanently excluded from using knowledge, which serves as a public good. Given the necessary intellectual preconditions, third parties cannot be permanently excluded from its usage. Thus, only incomplete closure results from using expertise or innovation to control the market.

In distinguishing knowledge from professional work, we develop a concept of two ideal-typical logics of control over knowledge in the labour process: market control and professional self-control (see Table 1). Since ideal types do not fully correspond with existing social phenomena, real types would inevitably appear as mixed forms of and approximations to ideal types. Professionals such as medical doctors or attorneys at law face a strong regulation of their knowledge bases and practices. Even if medical doctors contribute to the advancement of medical knowledge, their underlying practices are subject to professional standards and rules (professionalism). In contrast, if medical doctors use their knowledge to advise the pharmaceutical industry on the marketability of new remedies, their activity approximately fits the concept of knowledge work. In both examples, one and the same person might be engaged; however, in conceptual terms, distinct mechanisms work at (social) closure.

A third organizing principle is the logic of bureaucracy (Freidson, 2001: 50–51; Williamson, 1975), where managers are in control, and which is assumed to become less important in knowledge-intensive fields because employees who perform knowledge-intensive work normally enjoy high autonomy and self-control over their work. Nonetheless, managers attempt to regain control over knowledge production by standardizing or fragmenting the innovation process (Barrett, 2001; Author B and Author A, 2010). In the academic

Table 1 *Two ideal types: Professional and knowledge work*

	Professional work	Knowledge work
Knowledge content	Body of theoretical knowledge according to 'accepted rules of the art' (<i>lege artis</i>)	New knowledge products and processes that vary according to context and market
Control over knowledge	Self-control and (in continental Europe) legal regulation imply permanent social closure	Market control of knowledge implies – if any – temporary closure
Entry	Professionalism	Market logic
Examples (predominantly characterized by one ideal type)	Standardized education and professional credentials	No formal entry barriers
	Medical doctor, attorney at law, university scientist	Consultant, researcher, software programmer

field, the most obvious form of bureaucratic control is introducing quality conformance tests and quantitative measurements for research performance and scientific 'excellence'. Although such measurements are based on academic self-control through peer review of articles and research proposals, they promote a strategy to adapt the content of research to the necessities of rating systems. Furthermore, in large organizations, highly skilled employees are subject to managerial control concerning their internal career options and employment conditions. In this regard, bureaucracies have a de-monopolizing effect (Collins, 2004: 77) in that they minimize power derived from knowledge. For example, Austrian researchers at universities cannot utilize their knowledge to exert power over their employer; thus, they increasingly have temporary employment without a possibility of pursuing a career within their organization (see University Research section later).

On the Propensity to Organize Collectively

We only find ambivalent theoretical concepts and empirical findings on the propensity of highly skilled workers to organize. Rational choice models of collective action (Crouch, 1982; Olson, 1965) assume that highly skilled people refrain from organizing due to an individual market power derived from possessing scarce knowledge. Other scientific observers point to new managerial strategies and changes in the organization of labour that have contributed to individualistic personality traits and orientations and, hence, to a reluctance to join collective action (Abel and Pries, 2007; Heidenreich and Töpsch, 1998; Kotthoff and Wagner, 2008). In contrast, some studies report that highly skilled workers are indeed interested in collective action, though not necessarily in union membership. In their study on researchers at an Irish university, D'Art and Turner (2005) found that academics, semi-skilled workers and routine workers had only modest differences in group, union and political solidarity. This finding is traced back to the gradual proletarianization of academic labour at Irish universities that results from patterns of management, industrial relations and work organization familiar in industrial and commercial organizations (D'Art and Turner, 2005: 522).

Historically, trade unions have adapted their organizational boundaries either to small groups of skilled artisans (craft unionism) or to the main body of – unskilled or semi-skilled – workers (Müller-Jentsch, 1997; Streeck, 2011). In the former case, earnings were kept high by creating a collective identity as skilled professionals or artisans (intra-group solidarity), and so excluding the unskilled. However, with unskilled workers, associational power was achieved primarily by the sheer 'mass' of workers (inter-group solidarity), many of whom identified themselves with the notion of the working class. While nowadays highly skilled workers can barely be classified along the lines of class affiliations (Marks and Baldry, 2009), occupational closure is still an important means to maintain wages and other privileges.

Against this background, we claim that the existing sources of power shape the individual attitudes of highly skilled workers towards collective action.

According to our conceptual model, we expect professionals to organize – if at all – along specific trades and/or skills (intra-group solidarity). Knowledge workers are predicted to be less likely to organize collectively, at least as long as they have individual market power. However, we expect knowledge workers to be more likely to organize collectively when they have few exit options but there is an excess supply of knowledge work. Since permanent occupational closure is not attainable, knowledge workers are assumed to organize through intra-group solidarity, such as semi-professional groups, or through inter-group solidarity (Parkin, 2004: 58). The third category, managerially controlled knowledge production, serves as an ideal type where employers regained control over the labour process. Bureaucracy can destroy both power derived from occupational control and market monopoly over knowledge. In order to obtain sufficient associational power, workers who lack the possibility of either staying/advancing in their job or position within such organizations or finding an external job opportunity are expected to organize collectively based on inter-group rather than on intra-group solidarity.

Selection of Cases and Methodology

The empirical part of the article investigates two fields of knowledge-intensive work, namely, university and non-university research in Austria. This selection follows the principle of ‘theoretical sampling’ (Glaser and Strauss, 1967) by choosing research cases that facilitate a deeper understanding of the social phenomena under consideration. We selected university and non-university organizations operating in basic and applied social and natural sciences research. In these fields, approximations exist to all three ideal-typical logics of control. While professionalism prevails in university research, non-university research is primarily governed by market logic. The latest university reforms gave more importance to the logic of bureaucracy, at least for the growing number of fixed-term employees who lack the possibility of a university

Table 2 *Logics of control of knowledge, power and interest strategies*

Ideal type	Professionalism	Market logic	Bureaucracy
Extent of social closure derived from knowledge	Complete occupational closure	Temporary market closure	No closure
Individual power	Depending on status within occupational group/profession	Depending on position within market	Depending on position in hierarchy
Propensity to organize	<i>High</i> in intra-group professional associations	<i>Medium</i> in groups based on intra- and inter-group solidarity if individual market power is small	<i>Medium</i> in inter-group solidarity if positional power is small
	<i>Low</i> in groups based on inter-group solidarity	<i>Low</i> if individual market power is large	<i>Low</i> if positional power is high

career with stable employment. As regards the selection of scientific disciplines and fields of research, respectively, we expected a variation in employees' positions in the labour market and therefore in the attitudes and orientations towards collective action.

The research had two stages: the first stage was to evaluate the institutional effects on existing structures of interest representation; the second stage was dedicated to individual-level analysis focusing on attitudes and orientations towards collective action. The methods of data collection and analysis are presented in Table 3.

By employing a wide range of research methods in the first research stage, we intended to obtain a comprehensive account of existing institutional logics, structures of interest representation and views of specific interest groups on macro- and meso-levels of analysis. The interviews were utilized to better understand the complex relationship between recent laws and austerity policies and their impact upon the logics of control over knowledge and, hence, structures of interest representation. Existing trade unions in Austrian universities (Union of Public Services – GÖD) and non-university research (Union of Private Sector Employees, Graphical Workers and Journalists – GPA-DJP) are industrial unions comprising all types of employees and occupations in selected sectors. Besides context analysis and interviews with experts and

Table 3 *Summary of the data collected and analyzed*

Stage 1	<ol style="list-style-type: none">1 Content analysis of legal texts, collective agreements, works agreements, union documents, content of internet sites of specific interest associations and groups (ie. trade unions, professional organizations, status groups at universities, works councils, etc.).2 Semi-structured expert interviews with seven key informants, comprising two researchers, one science journalist, one research ministry official, one works councillor who also serves as collective bargainer and two former non-university researchers.3 Semi-structured interviews with six interest representatives at the sector level: four trade union officials, two social-movement activists.4 Collection and content analysis of emails distributed to registered users by two interest groups, 'Future of the Sciences' and 'Association of External Lecturers and Independent Researchers', in 2008/2009.
Stage 2	<ol style="list-style-type: none">1 University A: six semi-structured interviews with social scientists (among them four women, one full professor, three civil servant scientists, two temporary scientists) and two works councillors.2 University B: five semi-structured interviews with natural scientists (among them two women, one full professor, one associate professor, three temporary scientists) and two works councillors.3 Research Institute A: four semi-structured interviews with social science researchers (among them two women) and two works councillors.4 Research Institute B: four semi-structured interviews with natural science researchers (among them one woman).

interest representatives, two former non-university researchers were consulted on their engagement in a significant collective action initiative in the 1970s–1980s.

The second research stage was to evaluate individual positions in the labour market as well as perspectives and attitudes towards collective action. We interviewed selected members of three departmental units at universities (two social sciences and one natural sciences department) and employees of two non-university research organizations (one of each research field). In contrast to scientific disciplines, the explanatory power at departmental levels of universities was rather weak; therefore, we concentrated on the former variable of scientific fields. The interview guide was structured and evaluated along the dimensions of employment biography, general working conditions within an organization and a field, career perspectives, exit options, collective action, and membership in collective associations (professional and labour organizations). Interviews with existing works councillors sought to evaluate their views of employees' behaviour and orientations towards collective action on an organization level. All interviews and contents were evaluated by utilizing content analysis (Mayring, 2003: 56).

The next section is dedicated to the empirical results of our investigations. The structure follows our research questions on: 1) the impact of (changes in) institutional logics on the structure of interest representation; and 2) their effects on individual perspectives and attitudes towards collective action.

Empirical Results

University Research

Institutional Effects on the Structure of Collective Interest Representation

Since the early 1990s, Austrian universities have faced two structural reforms that have had an impact upon the institutional logics of control over scientific knowledge production. Austria has followed a European trend that challenges the logic of academic self-control in favour of market and management forms of university governance (Seeböck, 2002: 22). In granting the 21 Austrian universities full autonomy and releasing them from state bureaucratic structures, the University Organization Act (UOG) 1993 and the new University Act (UG) 2002 aimed at enhancing efficiency by modernizing the university system. The most salient element of the reform was autonomy in staffing issues, which replaced the centralized allocation of staff positions (Ministry of Education, Science and Culture, 2002). While the top university management has gained considerable administrative powers, academic staff have almost no formal rights to participate in decision-making on university matters. Moreover, the reform abolished existing legal structures of interest representation for mid-level lecturers and researchers (so-called BUKO). In transforming the universities into legal entities in public law, universities were granted the right to collective bargaining and to establish works councils. The latter were set up at all universities in 2004 and largely replaced the former system of employee

representation. In 2009, a new collective agreement negotiated between the GÖD and the National University Federation went into force.

In terms of staffing, new laws on the employment of university teachers enacted in 2001 stipulated that, except for full professors, newly engaged academic staff (pre-doctoral and post-doctoral) should have fixed-term posts. Since 2004, this law no longer binds university management, yet they continue to provide temporary contracts to most newly engaged academic staff. This policy has resulted in intensifying the existing segmentation of the internal labour market. A shrinking number of permanent staff (Group I) work alongside a growing amount of workers employed for only four to six years (Group II) (following another reform of the University Act in 2009, consecutive contracts can last a maximum of 10 years). Temporary university assistants and researchers are barely able to enter Group II and thus remain under the strong control of management.

This development has weakened trade union and workplace-related interest representation (works councils) since they can no longer support the temporary staff's struggle to become permanently employed. However, we found evidence for alternative forms of collective action based on inter-group solidarity. Shortly after the first collective agreement went into force in 2009, a group of temporary pre- and post-doctoral researchers, as well as lecturers at most universities and from various scientific disciplines, cooperated to protest against current working conditions (Association of External Lecturers and Independent Researchers, 2008/2009; Future of the Sciences, 2008/2009). They expressed concern that the newly concluded collective agreement – though providing for tenure track and permanent positions – would not solve the problems induced by the existing personnel policies.

Individual Interests and Perspectives Towards Collective Action

As outlined earlier, the internal labour market at Austrian universities consists of two clearly distinct groups of scientific employees. Group I (permanent scientific staff) uses professionalism as the prevailing logic of control; Group II (temporary lecturers and researchers) is mainly subject to management control. Our qualitative methodological design revealed existing interests and perspectives towards collective action among members of both employment groups in the social (University A) and natural sciences (University B). At both universities, we found a very restrictive employment policy that provided only a very small number (less than 5%) of newly engaged researchers with permanent contracts. In both research fields, temporarily employed respondents (post- and pre-doctoral) expressed their concern about their limited individual employment perspectives. In comparison to natural scientists, who tended to trace any future success or failure in pursuing a university career back to their own performance, social science respondents were more aware of the structural limits to their scientific endeavours.

However, neither of our temporarily employed respondents was a trade union member, albeit due to different reasons. One social scientist thought that traditional interest structures benefited permanent rather than temporary

staff; another pre-doctoral respondent at the same university expressed her doubts as to whether trade unions or works councillors were willing and powerful enough to improve her position. She closely followed the emergence of alternative forms of collective action (see earlier); however, because of limited time, she was not prepared to actively contribute to the actions. Two male natural science respondents (one pre-doctoral and one post-doctoral) appeared to be discouraged in pursuing a university career due to non-existing prospects for stable employment, and were to leave the university and the academic field. Neither of the respondents belonged to a union or had experience with collective action at the university. A works councillor at University B suggested in an interview why temporary employees were reluctant to engage in collective action. Because current staffing policy had contributed to an even greater dependence by employees on their academic superiors, the fierce competition over a small number of permanent positions meant that nobody could afford to risk his or her career prospects: 'PhD candidates in particular stay calm and accept being exploited.'

Among the group of permanent scientists, two female respondents in the social sciences were trade union members. Both reported that they joined the GÖD 10 years earlier to receive union support in obtaining a permanent position at the university and retained their membership. However, trade union membership has lost its attraction since unions and work councils can no longer advance careers. A natural science respondent who was a part-time civil servant pointed to her individual power derived from her scientific knowledge, which was even required in lectures and supervision of doctoral students during her pregnancy and maternity leave. She doubted that unions had a role in providing useful regulations for research. When she needed to decide upon her career prospects, she consulted with her peers and academic superiors. For some years, she had attempted to complete her 'habilitation' thesis, to raise her university status and become an (associate) professor, which she could not accomplish due to a lack of support from her professional superiors.

Natural and social science respondents did not differ in regards to membership in professional organizations, such as scientific associations. However, younger (pre-doctoral) and temporary scientists appear to have fewer affiliations than permanently employed senior scientists. Members of both employment groups try to achieve individual status and credentials within their scientific discipline in order to enhance their career opportunities within or outside the university providing their current employment.

Non-university Research

Prevalence of Market Logic and the Structure of Collective Interest Representation

Austrian non-university research organizations differ considerably with regard to both employee numbers and institutional logics of knowledge production and control. The largest research organizations employ between 300 and 1000 employees and mainly concentrate on the domain of natural and technical

research (e.g. the Academy of Sciences, Joanneum Research and the Austrian Institute of Technology). In contrast, research organizations focused on humanities, social and cultural sciences have an average of only nine employees (Kozeluh, 2008: 9). The supply of, and demand for, research projects in both fields investigated (social and natural research) are predominantly governed by market competition involving third parties, such as private sector clients or public authorities, rather than by professional self-control. Only a few (large) research organizations have both market and academic logics. Moreover, non-university research facilities largely differ with regard to their financial resources and consequently their employment structures. Research organizations that receive public funding or cooperate with industrial partners offer more stable employment relations than smaller units without basic funding and where atypical employment relations prevail. This difference explains why the 2004 collective agreement for non-university research is still restricted to large research organizations. Mainly for cost reasons, smaller units must focus on short-term research contracts that tend to erode their scientific knowledge base and therefore lead to a de-professionalization of research staff (Group II). Due to the absence of a clearly distinct occupational profile, there are no default career paths and no formal entry barriers apart from a first academic degree. The lack of formal criteria for market entry increases competition both at a personal and at an institutional level. Professionalism governs a smaller Group I of members in research organizations with high permeability to the academic system.

A loss in market power of researchers was predicted to support an interest in collective action based on inter-group solidarity, such as trade unionism. However, as in university research, traditional union structures have hampered rather than facilitated collective action in non-university research. An example of a failed attempt to organize researchers that still characterizes existing institutional barriers dates back to the 1970s and 1980s, when several works councillors of university and non-university institutions started to unionize. They primarily intended to improve the conditions for research grants, to regulate labour conditions and to restrict the widespread use of precarious employment contracts. The initiators approached the Union of Salaried Employees (GPA; since 2007, GPA-DJP) with these issues and sought a common platform within the union. Although the initiative attracted between 3500 to 4000 members, considerable resistance emerged from within the union. According to a former member of the union, this was caused partly by the initiative's reluctance to declare its political affiliation, and partly by its intent to include self-employed researchers who – at that time – were not accepted as union members. The GPA union then impeded the group's effort to join the union of arts, media and professions (KMSfB); the issue went into arbitration. During the two years of arbitration, many researchers left the GPA and when the arbitration court decided that the group was not allowed to switch union membership, it suspended its activities. Since then, unions have generally been absent from the sector of non-university research. Recent, new efforts to close this gap have included achieving a collective agreement in 2004, accepting the

self-employed as union members and establishing an interest group called 'work@professional' for highly skilled employees within GPA-DJP. However, recent austerity policies in non-university research (Taschwer, 2010) did not result in trade union action, but primarily in non-union collective action by researchers and their employers as well as peers at the universities.

Individual Interests and Perspectives Towards Collective Action

We conducted interviews with researchers in two medium-sized research organizations (between 15–30 researchers) engaged in the fields of social (A) and natural research (B). The latter exhibited close interrelationships with industrial partners. Both organizations were primarily governed by market logic, although academic influence appeared to be larger in the natural research organization. The existing collective agreement was not applied by both research organizations, but our respondents had wages above the minimum stipulated by the collective agreement. However, overtime and weekend work were barely remunerated. A works council existed in Organization A.

As regards their individual positions, all four respondents in Organization A indicated that they pursue strategies of individual market closure, such as the development of special expertise, as a means to gain competitive advantage in acquiring projects. In comparison, respondents in Organization B reported an excessive demand for their research; however, industrial research requirements were not very compatible with academic research. Respondents in both organizations felt powerful enough to advance their work-related interests and barely saw a need to consult with existing interest representatives, albeit for various reasons. Two of our male respondents in social research defined themselves as entrepreneurs or self-employed experts, rather than as employees. They rejected the working-class culture associated with trade unions. Moreover, because salaries and fees were negotiated individually, social and natural researchers thought that collective forms of interest politics made no sense for scientists. Another social researcher cast doubt on the unions' ability to improve working conditions and payment, which were seen as closely related to a market demand for expertise that could barely be regulated by collective agreements. This view was shared by a social researcher and the works councillor who decided to take over a position as interest representative because 'there was nobody willing to do the job'. He was also a union member and viewed unions primarily as information providers. Respondents of both groups (social and natural research) joined professional associations in order to accumulate social and cultural capital. Membership in a trade union, however, is – at least, at the moment – no option for all but one (social researcher) of our respondents.

Respondents in both research fields were dissatisfied with their working conditions and indicated that they would join a trade union or specific interest association if they were able to respond to the needs and interests of researchers. However, the respondents could not specify what kind of interests these organizations should be able to address. One social researcher pointed out that all employees must belong to the Austrian Chamber of Labour, which offered services such as legal advice and work-related information similar to a union.

Moreover, the unions were barely regarded as experts in non-university research, in comparison with other sectors of the economy.

Discussion and Conclusions

Building on insights of professional sociology and labour-relations theory, we developed the thesis that the dominant forms of governance in knowledge production (professionalism, market, bureaucracy) affect both the structure of interest representation and the propensity of highly skilled workers to organize. Institutions and individual positions in the labour market were predicted to provide distinct levels of individual and collective power over knowledge and, hence, needs to draw on associational power. Professionals were predicted to organize collectively in the form of intra-group solidarity (professional closure); however, knowledge workers were expected to have a smaller propensity to organize, but in situations of skill oversupply, they would try to establish intra-group rather than inter-group solidarity between occupational groups. Highly skilled workers with weak positions subject to bureaucratic control were predicted to organize for associational power based on inter-group solidarity. We used case studies in social and natural research and in two fields of knowledge production – university and non-university research. The qualitative methodology revealed the complex interrelationships between (changes in) the institutional governance of highly skilled work, the existing structures of interest representation and individual behaviour and attitudes towards collective action.

An institutional reform at universities has empowered top management. This has led to a de-professionalization of a growing group of temporarily employed scientific staff subject to bureaucratic control, while permanently employed scientists could still employ professionalism and self-control of their scientific knowledge production. Institutional changes also affected existing structures of workplace representation and trade unions. Works councillors largely lost their role in facilitating university careers. Although collective agreements provided for various categories of permanent scientific posts, trade unions and works councils were viewed as contributing to current management practices that largely ignored these options. As a result, temporary scientists refrained from joining the union. However, on macro- and meso-levels, there was clear evidence for our thesis that weak positions in the (internal) labour market resulted in inter-group solidarity based on collective action. In the context of austerity policies in 2009, various groups of temporary scientific staff at almost all Austrian universities organized to demand better working conditions and career structures. On a micro-level, we found almost no evidence for collective action. However, our sample of 11 respondents in the social and natural sciences provided some answers to this contradiction. Permanent employees, as expected, tended to affiliate with scientific associations based on intra-group solidarity. However, temporarily employed respondents primarily focused on two options: some still hoped to successfully apply for a permanent post within or outside their university and did not want to spoil their career options;

a second group of scientists, which we called discouraged, were already prepared to leave the university and, hence, the field of scientific knowledge production. Both groups pointed to severe time restrictions that also might prevent them from actively engaging in collective action.

As with most non-university research organizations in Austria, market logic governed the two establishments investigated. Respondents in social research tended to work under more competitive pressures than natural researchers who, at the time of our interviews, faced excessive industrial demand for their research products. Researchers in both fields appeared to identify with self-determined 'entrepreneurs' who control and exploit their own research rather than as employees who resort to unions. Apart from one social researcher, none of our respondents belonged to a trade union; however, in both fields, we found evidence of positive attitudes towards trade unions or alternative forms of interest representation. In particular, dissatisfied respondents indicated that they would join an organization that addressed the specific interests of researchers. Given the lack of interest representation for non-university research staff over the past 30 years (only recently filled by union activities and sporadic collective actions against austerity policies), it is not surprising that our respondents showed no active involvement in collective action or union membership. Moreover, non-university researchers most clearly approximated our conceptual category of knowledge workers that use strategies of individual market control via the development of special research expertise. As predicted, this then provided them with individual bargaining power and, hence, a negative attitude towards collective action.

Our empirical findings provided additional evidence regarding the hypothesis that highly skilled employees in knowledge production differ in their ability and willingness to join collective associations. Moreover, since social structures are not the only determinant of behaviour, we needed to take into account individual attitudes and identities (Author A, 2006) as well as the behaviour and strategies of existing interest associations in explaining the workers' propensity to organize.

Acknowledgements

We would like to express our deep gratitude to Anja Lasofsky-Blahut and Manfred Kofranek for their comments on an earlier version of the manuscript.

Funding

The work was supported by the Austrian Ministry of Science (grant number P19812-G14).

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