

Research & Occasional Paper Series: CSHE.4.07

CSHE | Center for Studies in Higher Education

UNIVERSITY OF CALIFORNIA, BERKELEY

<http://cshe.berkeley.edu/>

THE TRANSFORMATION OF ACADEMIC WORK: FACTS AND ANALYSIS

February 2007

Christine Musselin

Centre de Sociologie des Organisations

Copyright 2007 Christine Musselin, all rights reserved.

ABSTRACT

This paper outlines the main changes that have effected a transformation in the nature of academic work: on the one hand, the increasing diversification and specialisation of academic tasks, and on the other, new forms of control over academic work. An analysis of these trends leads to a discussion of the relationships between the evolution of academic work and non-academic work.

The academic profession has always been in the process of change. While reading historical research or looking at academics' reflections on their situation over time (for instance Wilson, 1980; Rice, 1986; Altbach, 1980, 1996, and 1998; Clark, 1987), it is striking that, whatever their particular historical moment, these writers all comment that the academic profession is no longer the same. There is clearly no ideal, universal, and stable state of the academic profession. Like all social bodies, this profession is a living entity, adaptive and responsive to external changes, but it also seeks to enact its own environment.

These developments affect the relationships between the academic profession and other parts of society, as well as the position of this particular profession within society. These changes also affect the profession's internal modes of regulation and its autonomy and ability to avoid the intervention of external forces. Finally, the content of academic activities themselves and the norms according to which they are to be achieved are also subject to change.

Those writing about the academic profession all seem to reach the same conclusion: that there is a "crisis of the professoriate." But even if this has been for years an inevitable diagnosis, the details or the intensity of the factors constituting the crisis have evolved over time. Many of today's frequently mentioned problems are linked to the massification of higher education (and of the academic profession as a consequence). In this respect, critical perceptions of science are also noteworthy: scientific progress is

sometimes depicted as dangerous and scientific results are controversial and open to public opinion, while at the same time access to knowledge has increased and is shared by more people than before, thus weakening the status of scientists. Both processes transform the situation of the academic profession in modern societies¹: holding an academic position is no longer rare. There has been a decrease as well in most countries in the status of academics in terms of income, prestige, or social position, even if academic identities seem to remain strong and stable (Henkel, 2000).

A further issue is related to the weakening of professional power. The figure of the scientist as defended by R.K. Merton (e.g., 1957) or J. Ben David (e.g., 1977) in the 'fifties and 'sixties—i.e., a member of a specific sector of society characterized by its capacity for self-regulation, the respect of a specific ethos, and its autonomy from external forces or other sectors of society—has been the subject of many controversies. Some of these controversies have been generated by social scientists with the emergence of the strong programme (Bloor, 1976; Latour and Woolgar, 1979; Latour, 1989) and the antidifferentiationist thesis (Shinn and Ragouet, 2005), but this figure of the scientist has been increasingly criticized by non academics. The previously celebrated autonomy of scientists came to be seen as a cause of inefficiency and has lately been described as an obstacle to private funding and to the transformation of science into innovation. At the same time, the limits of professional self-regulation have been highlighted, and the strength and efficiency of the scientific ethos in framing and disciplining individual behaviours have been questioned. As a result, non-professional instruments of control have expanded at the level of higher education institutions while new allocation formulas, assessment processes, and steering agencies have been developed by public authorities in order to create incentive structures that are able to canalize those who were considered to be over-autonomous scientists.

These evolutions do not merely transform the norms and rules regulating the academic profession in developed as well as in developing countries (see, for instance, Altbach, 2000; Altbach, 2002; Enders, 2001; Enders and de Weert, 2004), they also affect the content of academic activities in many ways. The aim of this paper will thus be first to describe and account for these transformations, and second to provide some explanations for them and to resituate them in the larger context of contemporary societies.

1. Transformation of academic work

Two main correlated occurrences will be distinguished: first, the on-going diversification and specialization process of academic activities, and second, the increasing forms of control that are being experienced.

a) Diversification and specialisation

Academic activities are more and more diverse

It is probably an over-simplification to say that, in the past, academic tasks comprised two main categories: teaching and research. The combination of these two activities

allowed for the categorization of faculty members along a continuum, starting with those solely teaching, continuing with those mixing both teaching and research, and ending with those mainly involved in research. Two principles of differentiation organised the academic profession: one separating academics according to their main activities (research or teaching) and another staking out territories around the different tribes (Becher, 1989) constituted by the disciplines and sub-disciplines.

An in-depth investigation of academic work would probably have shown that many academics were engaged in many other activities. This is at least what can be deduced from reading biographies (Pasteur by B. Latour, 2001; Nash by S. Nasar, 1998) or autobiographies (Friedel, 1994; Mendras, 1995; Crozier, 2002 and 2005; etc.): clearly, whatever the period concerned, academics were usually engaged in a multiplicity of activities. This confirms the importance of what Latour (1987) and Callon (1989) would describe as the building of socio-technical networks for their careers and in turn for their scientific reputation, today as in the past. Thus, even if one could distinguish, as did Bourdieu (1984-1988), between two types of careers,² the core activities of academics were teaching in classes and publishing results in academic journals. Other activities were necessary, but were not part of the job description and were not explicitly rewarded.

Today, this is no longer the case. Activities such as writing proposals, developing contracts, elaborating e-learning programmes, or being engaged in technology transfers are all tasks that engage faculty members nowadays. These activities are no longer considered as peripheral, unconvincing, or secondary, but rather are recognized as important aspects of academic work. Academics are expected to achieve these objectives, and scientific reward can be expected. In Germany and in the USA, for instance, the ability to raise money and to manage research projects based on external funding is one of the criteria for hiring professors (Musselin 2005b). These activities are no longer something academics can do; they are something academics must do. Let me give an example. Scientific productivity (in terms of number and impact of publications) is of course one of the explicit criteria set forth by the directors of the INRA (a French national research institution in agronomy) for promotion from the level of *chargés de recherche* (tenured research fellow) to the level of *directeur de recherche* (senior research fellow). However, management competencies are as important as the scientific profile: being responsible for a small research team within a lab, leading a European research project, and being in charge of contracts are necessary in order to have a chance for promotion (Carrère et al., 2005).

This diversification of tasks also holds true for teaching, where the scope of expected activities is much broader than in the past. Giving a class and supervising doctoral students are only part of training work. Designing e-learning programmes and finding internships for students, for example, also are part of “teaching” today.

Furthermore, new missions (or the so-called “third mission”) are emerging. They include links with regional, national, or international bodies and decision makers, interaction between scientists and the public at large, involvement in public debates, sharing of expertise, and support for public policy at large. Such endeavours also contribute to the diversification of academic activities.

The specialisation of academic staff

An important consequence of this diversification process is the specialisation of academic work. Specialisation follows two lines. First, it occurs through evolution in the distribution of tasks during the careers of tenured academics. Economists often point to a negative correlation between age and publications, the latter diminishing as the former increases. They often (explicitly or implicitly) explain this relationship by the decreasing intellectual capacities of scientists as they get older.³ As a matter of fact, most Nobel Prize winners were younger than forty when they did the work for which they received the Prize (Stephan, 2006). However, this fact underscores another that, rather than contradicting the first, accentuates it and relates to the evolution of tasks during career trajectories. According to a recent study in physics and biology in several French universities (Becquet and Musselin, 2004), there still exists a clear division of tasks according to career position: experiments are generally carried out by doctoral students and post-docs under the supervision of the *maîtres de conférences* (tenured assistants/associate professors), while professors raise funds, develop contacts, and write project proposals. Thus, the seniors are less and less in contact with actual scientific work.⁴ This increasing share in project management, administrative responsibilities, and maintenance of partnerships which occurs with seniority is again not new, but it becomes more and more important, clear, and explicit. As a result, the gap is growing between the disciplines for which this managerial function has become crucial (at least to ensure a certain level of scientific production) and those where it is still secondary (French historians, for instance). This is true both in terms of the academic tasks themselves as well as in the perception of environmental pressures: while the former are trying to develop contacts and to maintain them in order to secure necessary external resources and partnerships, the latter seem to be able to ignore their environment.

In some countries (such as the US, UK, and Netherlands), the trend toward specialisation leads to a reconsideration of the link between research and teaching and to segmentation of the permanent professoriate: higher education institutions open posts which are either teaching or research oriented, thus threatening the Humboldtian definition of what an academic is or should be.

A second line of specialisation develops according to contractual status. The increasing number of contingent staff allows for a specialised distribution of activities among them. In the US, for instance, undergraduate classes are often taught by part-time or adjunct staff, while in France they are allocated to doctoral students with teaching duties⁵ or to ATER (Time-limited Assistants for Research and Teaching) who have the same teaching duties as permanent faculty members but are appointed on a one-year contract that may be renewed only once. This same trend can be observed in research activities. The remarkable increase in post-docs in the US (Ehrenberg, 2005) and in many other countries (with regards to Australia, see Robinson, 2005, for instance) is also a way to allocate identified activities (specific experimentations within well-defined projects) to a particular type of manpower.

Last but not least, new positions emerge that require a mix of competences and original profiles of candidates. Staff working in transfer and technology offices, for example, are often trained as academics and hold a PhD, but they also have management skills. The individuals hired to answer calls on project proposals provide a further example: they

must possess a solid scientific background along with strong skills in project management. New functions at the frontier between academic and management activities are thus created and help establish a new division of academic tasks based on increased specialisation.

b) Increased controls over academic tasks

The developments discussed above facilitate the emergence of increased controls over academics because it is easier to direct single-task workers than multiple-task workers. There is, however, also a general increase in and diversification of the forms of control exercised over academics.

Among national procedures that were developed, the British Research Assessment Exercise provides a good example (Dill, 2002). It not only produced a clearer hierarchy among university departments in Great Britain, but also resulted in a reclassification of academic staff (drawing a line between the research active staff and the non research active staff). This impacts the management of staff in terms of salaries (in relation to scientific production) and hiring strategies (Harley, 2002).

The most striking and important development of these supplementary forms of control has taken place at the university level. In many countries, academia has been marked recently by an introduction of tools allowing higher education institutions to intervene in the management of their academic staff. First, in countries where academic positions were traditionally managed at the central level or by decentralised public authorities, this function has often been transferred to the university. Such is the case, for instance, in Italy, the Netherlands, and Austria (see Enders and de Weert, 2004); in these countries, decisions such as the creation, suppression, or reoccupation of positions are now directly negotiated by university leaders with their departments and *facultés*. This shift in management is expected to have deflationary effects: first by stopping the traditional game that consisted of asking the state for more positions than needed in order to recruit as many positions as possible, and second by encouraging the recruitment of contingent staff, each institution trying to get as many staff members as possible within the same budget.

Along with increased control of the size and composition of the academic profession, there has been an expansion of the incentive mechanisms at the disposal of higher education institutions to manage their academic staff. As documented in another paper (Musselin, 2005a), internal labour markets (Doeringer and Piore, 1971) developed within European universities. Thus, promotions during a career do not rely solely on mobility between institutions and the capacity to be hired (or recruited) elsewhere. Institutions have their own career procedures and development, and offer possibilities of promotion to the best academics or those who stay in one place. As an example, one can point to the introduction of merit pay salary in German universities, which is clearly an instrument allowing these universities to reward or sanction their academic staff and to introduce regular and compelling evaluation procedures within each institution.

There can be no doubt that such evolutions affected the nature of the relationship between academics and their institutions. The university is no longer a place welcoming and sheltering academic activities, but rather it has increasingly taken on the attributes

of an employer. The affiliation (or feeling of affiliation) to one's institution is progressively transformed into a work relationship. The responsibilities and duties of academics are not only defined by their professional group but also by their institutional work arrangements. This often accompanies a transformation in the type of employment contracts on which academics are recruited in order to allow a closer and more direct work relationship. In Austria (Pechar, 2004) or in Japan (Yamanoi, 2003), for instance, newly hired professors no longer have the status of civil servants but are recruited on private contracts; thus, their employer is no longer the abstract figure of the state but the concrete person of the university president.

Consequently, the possibility of intervention by university leaders in the allocation of work among academics is increased, while these leaders are less and less expected to behave as *primus inter pares*, but instead to act as employers. In many countries, academics must (at a minimum) account for the use of their time. Sometimes the partition of their time among different activities is not defined by their institution nor regularly renegotiated. Such an evolution, finally, transforms the scope of academic freedom. In many countries, academic freedom has long been considered as the freedom to teach and do research on topics chosen by the academic herself, as well as the freedom to organize her own work (Musselin, 2005b). It has become more and more limited to the first part of this definition because higher education institutions now have an increasing impact on the allocation of tasks and the time dedicated to these tasks.

The trend described above is frequently seen (and criticised) as a loss of control by the academic community. Many authors conclude that professional power is weakening because other forms of control have developed, but, as already argued (Musselin, 2005b; Enders and Musselin, 2005), this conclusion does not take into account the whole picture. By and large, the increase in control over academics relies heavily on assessments made by peers. The decisions made by editorial boards, hiring and promotion processes, or assessment procedures remain largely (if not entirely) controlled by academics, and they are no more lenient than previously. The RAE, for instance, relies heavily on the scientific criteria in each discipline. The incentives used in the internal labour markets are mostly academic-based, and the reward system that institutions have developed are all the more legitimate because they rely on external peer review. As a matter of fact, there is a great deal of evidence that professional power often supports institutional power. Thus, rather than a decrease in academic power, there is an emergence of other forms and other instruments of control in addition to academic regulations. As a result, academics are no longer evaluated only by their peers, but also by their own institution or by national measures developed by public authorities to control, rank, and benchmark academic activity. As a whole, there is a global increase in the level and intensity of controls which are often enacted through the peer review process.

Nevertheless, two mechanisms suggest a modification of these conclusions. On the one hand, what is considered to be "academic criteria" is evolving. Some new aspects which previously did not exist or which were not considered "scientific" are now defined as such by peers. The hierarchy among "scientific" criteria also may be subject to modification. On the other hand, peers sometimes accept the integration of hybrid criteria and thus take into account elements that are themselves not "purely" academic. This happens when peers feel obliged to incorporate such criteria in their judgments in order to remain credible (for example, by giving priority to the social relevance of a

project). This also occurs when decision-making bodies are composed of peer and non-peer members (as in the British research councils, for instance).

2. Transformation of academic work: an analysis

The points developed above have already often been outlined, described, and in some cases denounced. Many authors note the risks attached to these developments and fear the rise of “academic capitalism” (Slaughter and Leslie, 1997; or Slaughter and Rhoades, 2004), the results of managerialism (Halsey, 1992; Dearlove, 1997; Deem, 1998; Reed and Deem, 2002), or the consequences of globalization (Marginson and Considine, 2000). Others, on the contrary, point to the limits and weaknesses of the professional guild to regulate itself and reveal the abuses or inefficiency it produces (e.g., Alchian, 1977). But such diverging perspectives often rely on a normative, if not ideological, bias. The issue I would like to address here is not whether these evolutions are welcome or threatening. These are of course crucial questions, but we often lack empirical data (not to mention adequate methodology) to document the quantitative and, above all, the qualitative impact that the on-going transformations have on scientific production or on the innovative capacity of higher education and research systems (Musselin, 2006). Indeed, some recent studies measured the negative impact of the increasing number of contingent staff on student achievement (Ehrenberg and Zhang, 2004), while others have worried about the lack of creative autonomy experienced today by young scientists employed in non tenure-track positions at an age when one generally produces major results (Stephan, 2006). But such studies are still rare, and further evidence is needed to broadly assess the long-term effects of such changes in academic culture.

For this reason, instead of making an inventory of the potential positive or negative impacts of these developments, the second part of my paper aims to discuss two different—but compatible—explanations of these trends. I will argue that the distance between academic and non-academic work is being reduced as both sectors experience two different, but converging, processes.

a) The late industrialization of academic activities

A first explanation is directly connected to the massification of higher education systems. The diversification and specialization processes are linked to increasing numbers of students and staff, growth which is generated by a move toward the industrialization of academic activities. Although higher education, in many countries, remains a craft activity even after massification, this is changing (Gumport, 2000). Even if still far from an industrial activity, some features of industrialisation can be observed in academia, if one defines industrialisation as the transition from craft production of ad-hoc products to the organised production of mass products through the three mechanisms: specialisation of tasks, rationalisation, and normalisation.

E-learning provides a good example of the industrialisation of higher education.⁶ Traditional teaching was typically a craft activity, with each academic responsible for her own class, either alone or with a small team of assistants. The conception of the course

was a personal exercise, and the contents could be adjusted and redefined according to the needs or attitudes of the student. Both characteristics have been transformed by on-line teaching. On the one hand, course development requires both content expertise and technological skills, which are often distributed among different groups of actors (academics and technicians) who must cooperate to develop the product. Moreover, there is generally a separation between the “authors” of the course and, in turn, the teachers (tutors) leading it and interacting with the students. Thus tasks are allocated among even more different jobs⁷ (conception/ computerization/ tutoring). On the other hand, the on-line curricula are rather standardized products, not only in the sense that they are “set” and cannot be changed or adapted in real time, but also because they have to respect technical and conceptual norms. Teaching materials are no longer the personal handiwork of a specific teacher but more generic products that can be used by different tutors.

D.L. Kleinman and S.P. Vallas (2001) find the same process for research activities. They observe that research is being evaluated in terms of profit or production, using standardized quantitative measures (e.g., number of publications). They thus argue that academic research is being industrialised.

This first explanation for the changes in academic culture thus focuses on the inevitable consequences associated with the need to deliver more and more courses to more and more students, and to the transformation in working conditions implied by the mass production of education and research.

b) The transfer of practices and tools from non-academic work to academic work

The second explanation is not an alternative one: it is compatible with and can even accelerate the process described by the first. Here the focus is on another, more external, cause for the changes in academia. The diversification and specialisation processes, and the increased controls over academic activities, are described as both due to the transfer of instruments and practices from the private (business) sector to the academic sphere (or to the weakening autonomy of science and higher education and their increased permeability to other spheres). This would facilitate the transformation of universities into organizations (see Brunsson and Sahlin-Anderson, 2000; Krücken and Meier, forthcoming; Musselin, forthcoming), of academic activities into academic work, and of scholars into knowledge workers. For most authors, this process is linked to public policies motivated by the new public management rhetoric and recipes, as well as by the dismissal of professional regulation in favor of organizational regulation. But D.L. Kleinman and S.P. Vallas (2001), Jong (2005), and others insist on the influence that research contracts and partnerships with business have on the diffusion of codes and culture from the industrial to the academic sector. For them, being in contact with the non-academic research sector leads to learning and respecting the rules and practices of this sector. As a result, such interactions are a more powerful mode of transfer, or at least a more powerful vector of change, than higher education reforms.

c) Diminishing distance between academic and non-academic work

As mentioned above, the current developments affecting academic activities (craft) tend to transform them into academic work (industry). This considerably reduces the differences between the members of the academic profession and traditional workers. In terms of control over the organization of their time, the allocation of tasks, and the specialization of their activities, as well as in terms of staff and career management, the discrepancies between a wage-earner in a firm and a faculty member have decreased on the average (and more so for contingent staff than for traditional tenured positions). Nevertheless, this is not only due to the two processes discussed above (industrialization on the one hand and transfer from the private business sector on the other); it is also linked to the transformation of work in the non-academic sector. As D.L. Kleinman and S.P. Vallas interestingly argue about university and firm researchers, while “universities increase the frequency of their interaction with industry, they experience the mounting pressures to become isomorphic to their corporate partners”; but reciprocally, “as firms compete for investment capital and for academic researchers from the most prestigious universities, they increasingly adopt institutionalised practices associated with academic laboratories and departments” (2001: 453). The two authors thus point to the industrialisation of academic research and simultaneously the “collegialisation” of private firm research, which they describe as “a shift away from the hierarchical constraints (...) toward a newer, more flexible, and egalitarian organizational pattern that grants expert employees much higher levels of autonomy than before” (Kleinman and Vallas, 2001: 460). There are thus two convergent trends: one transforming academic activities and the other affecting work in business.

It seems, therefore, that work situations in business firms are growing closer to academic tasks. This is the argument developed by P.-M. Menger (2002), a French sociologist of arts, who concludes that intellectual activities (arts, of course, but scientific occupations as well) no longer are specific to academia but have become a model towards which the organization of work and employment relationships in firms are leaning. This is reflected in the transformation of firms themselves and in the managerial forms they seek to achieve. The model of the hierarchical, pyramidal structure has been replaced by flatter organizations. Firms also tend to abandon the rigid organization model for network structures and this further impacts the division of work. For instance, chains of interdependent but isolated specialists are replaced by collective projects within which different specialists interact and work together for a period of time limited by the achievement of the mission for which they are gathered together. The logic of staff organizing around such projects is first of all based on individual professional competences rather than on qualifications (specific degrees and credentials), while autonomy at work, responsibility, accountability, and individual performance within a collective group become more important than hierarchical authority and vertical control. As a result, the role of the firm in defining each job decreases in favor of the worker herself. Consequently, too, employment relationships are assumed to evolve. Instead of being recruited for tenured positions, the “new” workers in this model are supposed to go from one project to another. This shift justifies the development of the “new career theory” (in particular Arthur, 1994; and Arthur and Rousseau, 1996), which stresses the fading organisational careers (workers following the careers designed by internal markets within their firms) and the rise of boundary-less careers (workers themselves being responsible for the construction and development of their individual careers).

Comparing business firms and scientific (or artistic) organisations may be a stretch, but one cannot be insensitive to the similarities between the normative injunctions addressed to both workers and academics in terms of mobility (whether geographical, institutional, or thematic), flexibility, and networking. Such occurrences—referred to as “new capitalism” (Boltanski and Chiapello, 2005) in firms and as “academic capitalism” in universities—are considered either as an expected future for contemporary human beings (the position mostly adopted by the promoters of the “new career” approach), or as a threat to the workers/academics and to the society/higher education itself (see for instance Sennett, 1998, regarding society; and Rhoades and Slaughter, 2004, on higher education). But whatever one’s opinion, it is important to be attentive to these similarities and to the bridges they cause to be built, in terms of research agenda, between two spheres of activities generally viewed as separate.

3. Conclusion

In this paper I have focused on one specific aspect of the ongoing evolution of the academic profession: the transformation of academic activities. Two main trends are discussed: the diversification and specialisation of academic tasks, and the increased control over academic work. A more complete overview of the present change would be needed to show that these two trends are connected and in turn contribute to modification of the relationships between the academic profession and other parts of society, the position of academics within this society, the internal modes of regulation within the profession, and the capacity of external actors to influence them—all of which are only indirectly mentioned here. Nevertheless, this restricted focus on academic work is of great interest not only because it affects the day to day life of academics, but also because it reveals larger phenomena. I thus point out the industrialisation of higher education and research and the transfer of norms and practices from the industrial to the academic sector. Finally, I suggest that these transformations are the result of a more general process that is attenuating the discrepancies between academic and non-academic work. This leads me not only to compare the transformations of work in business and in academia, but also to clarify which of the driving forces identified above concern both firms and higher education institutions, and which are more specific to the academic world. No doubt further comparative research between academics and non-academic knowledge workers is needed.

REFERENCES

- Alchian, A. (1977). *Economic Forces at Work: Selected Works of Armen A. Alchian*. Indianapolis, Liberty Press.
- Altbach, P.G. (1980). “The Crisis of the Professoriate.” *Annals of the American Academy of Political and Social Science*, 448, pp. 1-14.
- Altbach, P.G. (ed.). (1996). *The International Academic Profession. Portraits of Fourteen Countries*. Carnegie Foundation, San Francisco, Jossey-Bass Inc.
- Altbach, P.G. (1998). “An International Crisis? The American Professoriate in Comparative Perspective.” In Altbach, P.G., *Comparative Higher Education: Knowledge, the University and Development*, Greenwich and London, Ablex Publishing Corporation, pp. 75-91.

- Altbach, P.G. (ed.). (2000). *The Changing Academic Workplace: Comparative Perspectives*. Chestnut Hill, MA, Center for International Higher Education, Boston College.
- Altbach, P.G. (2002). *The Decline of the Guru: The Academic Profession in Developing and Middle-Income Countries*. Chestnut Hill, MA, Center for International Higher Education, Boston College.
- Arthur, M.B. (1994). "The Boundaryless Career: A New Perspective for Organizational Inquiry." *Journal of Organizational Behavior*, 15, pp. 295-306.
- Arthur, M.B., and D. Rousseau (eds.). (1996). *The Boundaryless Career: A New Employment Principle for a New Organizational Area*. New York, Oxford University Press.
- Becher, T. (1989). *Academic Tribes and Territories: Intellectual Enquiry and the Culture of Disciplines*. Philadelphia, Open University Press.
- Ben David, J. (1977). *Centers of Learning: Britain, France, Germany and United States*. New York, McGraw-Hill.
- Becquet, V., and C. Musselin. (2004). *Variations autour du travail des universitaires*, Convention MENRT 20022007, ACI : « Travail », rapport CSO, Paris.
- Bloor D. (1976). *Knowledge and Social Imagery*. London, Routledge and Kegan Paul.
- Boltanski, L., and E. Chiapello. (2005). *The New Spirit of Capitalism*. London, Verso.
- Bourdieu, P. (1984). *Homo academicus*. Paris, Editions de Minuit. Translated into English (1988). *Homo Academicus*. Palo Alto, Stanford University Press.
- Brunsson, N., and K. Sahlin-Andersonn. (2000). "Constructing Organisations: The Example of Public Reform Sector." *Organisation Studies*, (21) 4, pp. 721-746.
- Callon, M. (ed.). (1989). *La science et ses réseaux : Genèse et circulation des faits scientifiques*. Paris, La découverte.
- Carrère, M., S. Louvel, V. Mangelmatin, C. Musselin, F. Pigeyre, M. Sabatier and A. Vallette. (2006). *Les carrières des chercheurs de l'INRA : Analyses et interprétations*. Monograph.
- Clark, B.R. (1987). *Academic Life, Small Worlds, Different Worlds*. Princeton N.J., Carnegie Foundation for the Advancement of Teaching and Lawrenceville N.J., Princeton University Press.
- Crozier, M. (2002). *Ma belle époque*. Paris, Editions Fayard.
- Crozier, M. (2005). *A contre-courant*. Paris, Editions Fayard.
- Dearlove, J. (1997). "The Academic Labour Process: From Collegiality and Professionalism to Managerialism and Proletarianisation?" *Higher Education Review*, 30, pp. 56-75.
- Deem, R. (1998). "New Managerialism in Higher Education: The Management of Performances and Cultures in Universities." *International Studies in the Sociology of Education*, 8(1), pp. 47-70.
- Dill, D. (2002). "Regulatory Success, Regulatory Failure: A Review of the Regulation of Academic Quality in the United Kingdom." Paper presented at the Consortium of Higher Education Researchers (CHER) Annual Research Conference, Vienna, Austria.
- Doeringer, P.B., and M.J. Piore. (1971). *Internal Labor Markets and Manpower Analysis*. Lexington, Heath Lexington Books.
- Ehrenberg, R.G. (2005). "The Changing Nature of the Faculty and Faculty Employment Practices." Working Paper, Cornell Higher Education Research Institute.
- Ehrenberg, R.G., and L. Zhang. (2004). "Do Tenured and Tenure-Track Faculty Matter?" Working Paper, Cornell Higher Education Research Institute.

- Enders, J. (ed.). (2000). *Employment and Working Conditions of Academic Staff in Europe*. Materialien und Dokumente, Hochschule und Forschung, Francfort sur le Main.
- Enders, J. (ed.) (2001). *Academic Staff in Europe: Changing Contexts and Conditions*. Westport, CT and London, Greenwood Press.
- Enders, J., and C. Musselin. (2005). "Back to the Future, Back to the Future? The Academic Professions in the 21st Century" OECD, Paris, December.
- Enders, J., and E. de Weert (eds.). (2004). *The International Attractiveness of the Academic Workplace in Europe*. Materialien und Dokumente, Hochschule und Forschung, Francfort sur le Main.
- Friedel, J. (1994). *Graine de Mandarin*. Paris, Editions Odile Jacob.
- Gouldner, A.W. (1958). "Cosmopolitans and Locals: Toward an Analysis of Latent Social Roles 1." *Administrative Science Quarterly*, 2, pp. 281-306.
- Gouldner, A.W. (1958). "Cosmopolitans and Locals: Toward an Analysis of Latent Social Roles 2." *Administrative Science Quarterly*, 2, pp. 440-480.
- Gumport, P. (2000). "Academic Restructuring: Organizational Change and Institutional Imperatives." *Higher Education*, 39(1), pp. 67-91.
- Halsey, A. (1992). *The Decline of Donnish Dominion*. Oxford, Clarendon Press.
- Harley, S. (2002). "The Impact of Research Assessment Exercise on Academic Work and Identity in UK Universities." *Studies in Higher Education*, 27, pp. 187-205.
- Henkel, M. (2000). *Academic Identities and Policy Change in Higher Education*. London and Philadelphia, Jessica Kingsley.
- Jong, S. (2005). "How Industry Ties Shape the Organization of Science: Reorganizations at Berkeley and Stanford after the Birth of the Biotech Industry." Paper presented at the *European Forum on the Role of Universities in Innovation Systems*, European University Institute, Florence, June.
- Kleinman, D.L., and S.P. Vallas. (2001). "Sciences, Capitalism, and the Rise of the 'Knowledge Worker': The Changing Structure of Knowledge Production in the United States." *Theory and Society*, 30(4), pp. 451-492.
- Krücken, G., and F. Meier. (Forthcoming). "Turning the University into an Organizational Actor." In: G. Drori, J. Meyer, and H. Hwang (eds.), *Globalization and Organization*, Oxford, Oxford University Press.
- Latour, B. (1987). *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, Harvard University Press.
- Latour, B. (2001). *Pasteur, Guerre et paix des microbes*. Paris, La Découverte.
- Latour, B., and S. Woolgar. (1979). *Laboratory Life: The Social Construction of Scientific Facts*. Beverly Hills, CA, Sage Publications.
- Marginson, S., and M. Considine. (2000). *The Enterprise University: Power, Governance and Reinvention in Australia*. Cambridge and Melbourne, Cambridge University Press.
- Mendras, H. (1995). *Comment devenir sociologue : Souvenirs d'un mandarin*. Paris, Actes Sud.
- Menger, P.-M. (2002). *Portrait de l'artiste en travailleur : Métamorphoses du capitalisme*. Paris, Seuil.
- Merton, R.K. (1957). "Priorities in Scientific Discovery: A Chapter in the Sociology of Science." *American Sociological Review*, 22, pp. 635-659.
- Miladi, S. (2005). "L'organisation de l'enseignement en ligne : limites et contraintes." Paper presented at the international conference *L'information numérique et les enjeux de la société de l'information*, organised by the Institut Supérieur de Documentation, University of La Manouba, Tunis, April 14-16.

- Musselin, C. (2005a). "European Academic Labor Markets in Transition." *Higher Education*, 49, p. 135-154.
- Musselin, C. (2005b). *Le marché du travail universitaire : France, Allemagne, Etats-Unis*. Paris, Presses de Sciences Po.
- Musselin, C. (2006). "What we already know about the academic profession, what we still do not know, and what we would like to know." Paper written for the second meeting on *The Future of Public Universities*, organised by the SSRC, New York, May.
- Musselin, C. (Forthcoming). "Are Universities Specific Organisations?" In G. Krücken, C. Castor, A. Kosmützky, and M. Torca (eds.), *Towards a Multiversity? Universities between Global Trends and National Traditions*, Bielefeld, transcript-Verlag.
- Nasar, S. (1998). *A Beautiful Mind: A Biography of John Forbes Nash Jr., Winner of the Nobel Prize in Economics*. New York, Simon and Schuster.
- Pechar, H. (2004). "The Changing Academic Workplace: From Civil Servants to Private Employees." In E. Enders and E. de Weert (eds.), *The International Attractiveness of the Academic Workplace in Europe*, Materialien und Dokumente, Hochschule und Forschung, Francfort sur le Main.
- Powell, W.W., and J. Owen-Smith. (1998). "Universities and the Market for Intellectual Property in the Life Sciences." *Journal of Policy Analysis and Management*, 41, pp. 116-145.
- Reed, M., and R. Deem. (2002). "New Managerialism – The Manager-Academic and Technologies of Management in Universities: Looking Forward to Virtuality." In K. Robins and F. Webster (eds.), *The Virtual University*, Oxford, Oxford University Press, 126-147.
- Rice, R. E. (1986). "The Academic Profession in Transition: Toward a New Social Fiction." *Teaching Sociology*, 14(1), pp. 12-23.
- Robinson, D. (2005). "The Status of Higher Education Teaching Personnel in Australia, Canada, New Zealand, the United Kingdom. and the United States." *International Higher Education and Research Conference*, Melbourne, December.
- Sennett, R. (1998). *The Corrosion of Character: The Personal Consequences of Work in Late Capitalism*. New York, W.W. Norton and Company.
- Shinn, T., and P. Ragouet. (2005). *Controverses sur la science*. Paris, Raisons d'Agir.
- Siow, A. (1995). "The Organization of the Market for Professors." Working Paper No. UT-ECIPA-SIOW-95-01, Toronto University.
- Slaughter, S., and L.L. Leslie. (1997). *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. Baltimore, John Hopkins University Press.
- Slaughter, S., and G. Rhoades. (2004). *Academic Capitalism and the New Economy*. Baltimore, John Hopkins University Press.
- Stephan, P. (2006). "Job Market Effects on Scientific Productivity." Paper presented at the Sciences Po Seminar on Higher Education, February 2005, http://www.cso.edu/fiche_rencontre.asp?renc_id=46.
- Wilson, L. (1980). "Dialectic Aspects of Recent Changes in Academe." *Annals of the American Academy of Political and Social Science*, 448, pp. 15-24.
- Yamanoi, A. (2003). *A Study of the Non-Tenure System for Faculty Members in Japan*. Hiroshima, Research Institute for Higher Education, Hiroshima University.

NOTES

¹ For an in-depth presentation of this issue and of its potential forthcoming consequences and evolutions, see Enders and Musselin (2005).

² On his work published in 1984 (or in English translation, 1988) from a study on French academics in 1967, P. Bourdieu distinguishes between “pure” scientific careers and careers built on the participation in the management of science (sitting in evaluation commissions, being elected in national bodies, etc.).

³ See, for instance, Siow (1995).

⁴ The importance of the administrative responsibilities and of the tasks of project management in the activity of the professors is mentioned by some *maîtres de conférences* (or some *chargés de recherche* at the INRA or in other national centres for scientific research) as the main reason why they do not want to become professors or *directeurs de recherche*. They consider that the increase in salary they would get is too low to compensate for the increase in responsibilities and the decrease in concrete research tasks.

⁵ Among the doctoral fellowships awarded by the Ministry of Education, an increasing number are for “*allocataires-moniteurs*”. They have a three year fellowship which includes a teaching duty of 64 hours per year. They also have to attend the classes of the CIES (Centres for Initiation to Higher Education), which prepare them for their potential future situation as academics.

⁶ As for the problems it raised in the academic community and institutions, the French policy for the creation of what have been called “*campus numériques*” (digital campuses) has been relatively unsuccessful in part due to the resistance of academic work and academics to the transition to industrial processes (Miladi, 2005).

⁷ To those already mentioned should be added the project managers, the sales taskforce, the webmaster, etc.