



HAL
open science

What's behind a Guideline? Authority, Competition and Collaboration in the French Oncology Sector

Patrick Castel

► **To cite this version:**

Patrick Castel. What's behind a Guideline? Authority, Competition and Collaboration in the French Oncology Sector. *Social Studies of Science*, 2009, 39 (5), pp.743 - 764. 10.1177/0306312709104435 . halshs-00587062v2

HAL Id: halshs-00587062

<https://hal-sciencespo.archives-ouvertes.fr/halshs-00587062v2>

Submitted on 13 Apr 2016

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

ABSTRACT Taking the French oncology sector as a case study, this paper shows that guidelines are used strategically by individual physicians and groups of physicians. While some studies have made convincing arguments about the rise of guidelines as a manifestation of a new type of objectivity, this case study provides evidence that the proliferation of medical guidelines is also the result of an attempt by some physicians to improve their positions relative to competing groups. Guidelines could indeed be strategic resources used by professional actors at the expense of other professionals in order to (1) maintain a sufficient amount of activity and (2) increase control over therapeutic decisions. The study also points to other kinds of changes that guidelines may influence, beyond medical practices and coordination: the evolution of the structure of power relationships inside the medical profession. A perspective on the sociology of organizations, which places concrete exchange and bargaining relations at the core of its analysis and treats social control as being continually challenged and (re)produced, helps to identify other reasons why standardization does not prevent local specificities and may even enhance them.

Keywords guidelines, organization, power, profession, standardization

What's Behind a Guideline?

Authority, Competition and Collaboration in the French Oncology Sector

Patrick Castel

Standards and, more broadly, organizational rules are a key topic in the literature on organizations. Since organizational rules are meant to be tools to improve an organization's efficiency, sociologists of organizations have long been interested in studying the process of their development, as well as their actual impact on individual and collective actions in organizations (see, for example, Selznick, 1949; Gouldner, 1954). Indeed, analogies can be drawn between some of the questions and results in such classic organizational studies and those of STS studies on medical guidelines.

First, the results of organizational studies contradict the common assumption that standards or organizational norms have the power to make organizations function uniformly. The studies stress that the adaptation of standards to the specificities of each organization is a prerequisite for their successful dissemination (Segrestin, 1997; Brunsson & Jacobsson, 2000).

This is consistent with well-known results on the inability of guidelines to reduce variations in organizational practice, and on the necessity of local negotiations and adaptation processes for sustaining everyday care practices and institutionalized patterns (Timmermans & Berg, 1997; Zuiderent-Jerak, 2007). Second, organizational studies conclude that the introduction of standards does not always benefit the actors who are in charge of their administration, such as supervisors and regulators (Segrestin, 1996; Cochoy et al., 1998; Castel & Merle, 2002). This conclusion is also echoed by recent empirical studies that question whether the development of medical standards contributes to the weakening of the profession's power and autonomy (Berg et al., 2000; Timmermans & Kolker, 2004; Weisz, 2005).¹ Third, organizational studies (Segrestin, 1997; Brunsson & Jacobsson, 2000) as well as STS studies (Berg, 1997; Bourret, 2005; Cambrosio et al., 2006) have analysed standards as potentially useful coordinative devices.

In addition to these convergences, the organizational approach and some of its key concepts may offer some complementary, original insights on standardization and the bureaucratization of medicine. Drawing from seminal works by Weber, sociologists of organizations have shown that collective action is problematic, notably because actors pursue their own, often non-convergent interests, and that power has a dynamic role in relations among actors in a context of strategic interdependence (Emerson, 1962; Crozier, 1965; Pfeffer & Salancik, 1978; Crozier & Friedberg, 1980). This approach leads to an emphasis on the 'strategic interactions among a set of actors placed in a given field of action and mutually dependent for the solution of some common "problem"' (Crozier & Friedberg, 1995: 75). Taking the French oncology sector as a case, I will show that guidelines are used strategically by individual physicians and groups of physicians, and that this helps to explain some characteristics of the standardization process. This framework thus has two potential implications. First, it reveals another force propelling the development of guidelines. Berg (1995), Daly (2005) and others have studied how the proliferation of guidelines resulted from medical researchers' criticism that clinical practices make limited use of available evidence from medical science. These developments have also been treated as manifestations of a new type of objectivity in the medical domain, 'regulatory objectivity' (Cambrosio et al., 2006). The French oncology sector provides an empirical case compatible with those theses. However, that sector shows evidence that the proliferation of different, and sometimes conflicting, guidelines that were produced at the national, regional and local levels also resulted from attempts by some physicians to improve their positions or 'jurisdiction' (Abbott, 1988) relative to competing groups. Second, in line with other studies that clearly demonstrated how competition among professionals accompanied the development of evidence-based medicine (see, in particular, Marks, 1997), an organizational approach is helpful in underlining the dynamics and consequences of this competition. In particular, I will stress how guidelines may be used creatively and opportunistically by physicians in order to modify organizational patterns. For

instance, the prominence of cancer centres and their physicians in the development and implementation of guidelines re-secured their regional and national leadership.

This point reinforces the argument made by science studies that, paradoxically, standardization does not eliminate the diversity of practices among physicians, even if it may sometimes transform those practices.

Material and Methods

The Characteristics of the French Oncology Sector

There are four main types of healthcare organization involved in cancer care in France: French comprehensive cancer centres (Centres de Lutte Contre le Cancer, CLCCs), public teaching hospitals, general hospitals and clinics.

Created in the 1920s, the 20 French comprehensive cancer centres are autonomous, publicly funded private institutions that concurrently manage research activities and treat patients within their respective regions. Each centre is directed by a physician. The 20 directors of the CLCCs collectively control the board of the National Federation of CLCCs (FNCLCC), which acts as an employers' association as well as a facilitator for collaborative scientific projects. Public teaching hospitals were created in 1958, when the Hospital Reform Act linked regional public hospitals to university medical schools (see Jamous & Peloille, 1970). Public teaching hospitals have become the keystone of the French healthcare system. They are expected to offer the best and most advanced treatments, to train physicians and to conduct medical research for all pathologies. General hospitals and private clinics participate in cancer care by providing diagnostics and/or treatments in surgery, radiotherapy and/or chemotherapy.

The organization of cancer care in France exhibits some of the major characteristics that Pickstone (2007) described and analysed for cancer treatment in Great Britain, Sweden and the USA. There also are some distinctive features, and this paper will show that the contingent dynamics of standardization in France have been influenced by the particularities of the country's organization of cancer care.

First, competition between specialties and between healthcare organizations is particularly acute in France. There is very little reliable quantitative information describing the organization of hospital care for cancer patients, but public reports and ad hoc research generally conclude that cancer centres and teaching hospitals provide less than 40% of total cancer care, while community hospitals, either private or public, provide more than 60%. Before 2000, no national plan to regulate the organization of cancer care had been launched since the revision of CLCCs' status in 1945. Cancer centres are obliged to provide the full range of treatments for the disease, while other hospitals are free to specialize in a particular activity. Many physicians are able to participate in the treatment of cancer, and to this day, there are no legal restrictions on the administration of drugs and cancer surgery. In contrast to the situation in the USA, for instance, where

medical oncologists are the only medical specialists able to prescribe drugs to cancer patients, in France every organ specialist (gastroenterologists, head and neck surgeons, lung specialists, internists) is theoretically allowed to do so.

Another major characteristic of the French cancer sector lies in the historical competition between public teaching hospitals and cancer centres, which was accurately depicted by Pinell (2002) in his study of anti-cancer policy in France at the beginning of the 20th century. Pinell showed that cancer centres were conceived as research- and pathology-oriented structures, under strong state sponsorship, that promoted a collaborative and comprehensive approach to cancer management. This contrasted sharply with public hospitals, which were more oriented to particular organ systems and dominated by surgeons, in line with the tradition of the Paris Clinical School. This competition for market share and the contention over the definition of the legitimate medical approach to cancer treatment continued throughout the second half of the 20th century (Castel & Friedberg, 2004).

Data

Fieldwork was carried out in six different settings: at the national level, within the FNCLCC, which was the main producer of cancer guidelines in France during the period under scrutiny (1999-2006), and in five French administrative regions.

Fieldwork at the national level (1999-2002) focused on the genesis of the federal guidelines project and main goals assigned to it. Data were obtained from daily informal exchanges and semi-directed interviews with the main federal actors in charge of the project and with project directors. I also had access to working documents and the proceedings of meetings, where the scope of the project was discussed, decided and (re)defined.

At the regional level, I conducted nearly 300 semi-directed interviews with representatives of regulatory bodies, directors of hospitals and physicians (1999-2002). In a specific region, for 4 years I was able (2003-2006) to observe collective decision-making processes through which physicians negotiated and validated guidelines, and to interview physicians about their involvement in, and their opinions on, guideline implementation. I also observed the therapeutic decision-making processes (N=450) of four medical staff members, focusing on the manner in which physicians referred to guidelines when they had to develop therapeutic strategies for actual patients.

A Non-unified Process Led by Professional Organizations

The development of medical guidelines in the French oncology sector was not unified: it followed several professional initiatives set forth primarily by the FNCLCC from the beginning of the 1990s that existed alongside the initiatives of medical societies and public agencies in competition for the legitimacy conferred by the scientific authority in the sector.

A Professional Initiative

Early attempts to institutionalize the production and use of guidelines in the French healthcare system began at the turn of the 1990s (Robelet, 2002). In 1987, a national agency was created to develop medical evaluation, but its actual results had been rather modest. The 1991 Health Law underlined once again the importance of evaluation in the healthcare sector (including evaluation of medical practices), but this did not lead to any significant change either. In fact, the first national standards were promulgated in 1993. These norms, however, were aimed at forbidding dangerous and costly practices rather than promoting the best ones (Kerleau, 1998). Furthermore, cancer care was not addressed by these public guidelines. The first French recommendation regarding cancer was published in 1993 by a medical society (the French Society of Mammography and Breast Pathology) and dealt with quality criteria in mass-screening for breast cancer – a diagnostic procedure.

From then on, cancer centres took the lead in developing cancer guidelines in France. In 1993, the board of the FNCLCC mandated some of their peers to launch a project aimed at 'harmonizing clinical practices between cancer centres, concerning diagnostic, classification, treatment and follow-up procedures' (Annual Report of the Fédération Nationale des Centres de Lutte Contre le Cancer, 1994 [author's translation]). The selected methodology to elaborate these guidelines was initially a consensus conference. But a trip to the USA, where the project leaders visited various prestigious US medical institutions, changed their minds: guidelines should rather be based on a critical review of medical literature in order to limit the impact of subjective opinions by the most reputable physicians and consequently to 'objectify' these guidelines. This project was thus explicitly conceived as a part of the emerging evidence-based medicine. From this point onwards, the scope of the project also changed its aim to defining the best practices not only for CLCCs, but also for the entire sector. It was sponsored by individual CLCCs and by the National League Against Cancer, the main patient organization in France.²

Methodologists were recruited by the Federation. They were public health physicians who were trained to review the literature and to evaluate whether or not the final guidelines were congruent with this literature. They were meant to argue against physicians when the latter were prone to developing guidelines according to their own experience or according to the first results of the latest clinical trials rather than to a systematic review of the literature.

In addition to the methodologists, the project's leaders planned from the start to involve as many cancer centre physicians as possible in the development of guidelines. From their point of view, this strategy presented some assets: first (and quite obviously), these 1000 or so physicians represented a skilled labour force; second, their participation was conceived as a way to train them to learn and practice evidence-based medicine and to facilitate the acceptance and appropriation of guidelines. By the end of 1994, 300 cancer centre physicians had already participated, either in the task groups

TABLE 1

Participation of medical societies in the FNCLCC's guidelines (1993-2006)

| Medical society | Number of guidelines |
|---|----------------------|
| French Dermatology Society | 2 |
| French Society of Pediatric Oncology | 6 |
| French Federation of Digestive Oncology | 2 |
| French Society of Gynecologic Oncology | 4 |
| Society for the Study and the Treatment of Pain | 5 |
| French Society of Pneumology | 2 |
| Study Group of Lymphomas | 2 |
| Others* | 6 |
| Total | 29 |

*French Sarcoma Group, French-speaking Society of Enteral Nutrition, French Society of Pathology, French Association of Urology, French-speaking Society of Brain Surgery, and French Society of Nuclear Medicine.

(which developed the clinical practice guidelines) or in the feedback process (consisting of comments on the first versions of the guidelines). Six hundred physicians had taken part in the project by 1998. The first documents, called 'Standards, Options and Recommendations' (SOR), were produced in 1995. They consisted of long monographs (about 200 pages) and of summaries published by the main French cancer journal *Bulletin du cancer*.³

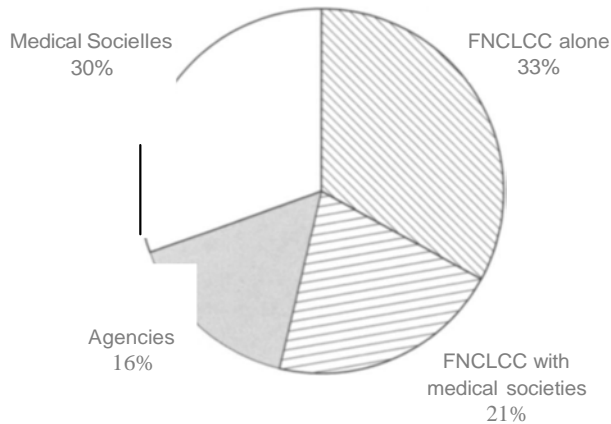
Collaboration and Competition

Beginning with the publication of the first SORs, the FNCLCC involved more and more people working outside the CLCCs. At first, in 1995, an advisory board was created in addition to the executive committee, which was exclusively composed of five directors. In 1996, the executive committee welcomed one more CLCC physician, two representatives of medical societies (paediatric oncology and gynaecologic oncology) and four physicians who practiced outside CLCC. The advisory board grew to 74 members. It was decided in 1997 to create a scientific board exclusively composed of people working outside CLCC.

From 1998 to 2006, the FNCLCC published 29 clinical practice guidelines in collaboration with a medical society and more than half of the physicians who participated in the elaboration of guidelines or in the feedback process worked outside CLCC.

Despite this alliance with other actors or institutions, the FNCLCC managed the process and kept the label 'Standards, Options and Recommendations' and the (legal) responsibility for its guidelines during this period.⁴ It was responsible for 81 of 148 French clinical practice guidelines (54%) that were published (see Fig. 1). Furthermore, the *British Journal of Cancer*, one of the most highly regarded cancer journals in Europe, also published the SORs. FNCLCC is the only French organization whose cancer guidelines are disseminated outside France. The SORs were approved by the state, and medical audits conducted by social insurance bodies used them as reference.

FIGURE 1
Producers of French cancer guidelines (1993-2006)



Other French producers of guidelines were the medical societies. They published 46 sets of guidelines between 1997 and 2007. Like the FNCLCC, their guidelines concerned the management of specific cancers. Among them, the French Association of Urology (14 published guidelines -9%), the French Society of Hematology (nine guidelines) and the French Federation of Digestive Oncology (six guidelines) were the most productive. Other medical societies published only one guideline during this period.

Guidelines by the National Agency were of a different kind: they corresponded either to recommendations for prevention and screening procedures or the evaluation of new techniques, or they answered precise questions (for example, 'Can initially non-resectable hepatic metastases be made resectable?').

Diversity of the Implementation Processes at the Regional Level

A recent study funded by the French National Cancer Institute confirmed the results of two previous surveys conducted by the FNCLCC: the SORs were generally considered by physicians as the most reliable guidelines for oncology. However, the physicians who worked in CLCCs or who devoted more than one-half of their activity to cancer patients were more familiar with these guidelines and utilized them more frequently.

Nonetheless, the SORs were considered as tools for everyday practice by a few practitioners who worked inside teaching hospitals or cancer centres. Cancer centres thus created voluntary and cooperative networks for the elaboration and implementation of regional treatment protocols adapted to the characteristics and resources of the local healthcare system. This entailed initiating and monitoring the discussion process at the regional level. Federal review monographs were thus transformed into decision-making algorithms and into specific recommendations of one or another remedy chosen from among several scientifically appropriate

treatments. In some regions, the cancer centre created a network without involving the regional teaching hospital. As a result, these teaching hospitals organized opposing networks.

Besides these regional networks, some physicians who specialized in the treatment of specific organs – mainly urologists, gastroenterologists, surgeons, lung specialists and haematologists – stated that they used the guidelines of medical societies rather than the SORs. Thus, while French physicians generally considered the SORs to be the standard reference guidelines and appreciated them for their scientific reliability, in practice they referred to differing and even contradictory guidelines (Fervers et al., 2006).

Development of Guidelines as a Collective Strategy for Intra-professional Legitimacy

The specific dynamics of this movement – its initial impulse and the diversity of involved organizations at the national and regional levels – contributed to the specific organization of cancer care in France. In particular, the rivalry and competition between specialties (pathology-centred specialists vs. organ-centred specialists) and between hospitals influenced this development.

The Reinstatement of Cancer Centres as Dominant Actors through the Development of Guidelines

There were several reasons for the launch of the guidelines programme by the FNCLCC. On one hand, the development of the guidelines was in line with a process described in other studies as an intra-professional movement favouring a more 'scientific' basis for medical knowledge (Berg, 1995; Timmermans & Kolker, 2004; Cambrosio et al., 2006). On the other hand, there were instrumental reasons for pursuing such a programme: the CLCCs' directors expected to take advantage of this programme to re-secure their role at the national level and at the apices of regional hierarchies.

The traditional collective identity of French cancer centres and the evolution of their position in the French oncology sector explain why their physicians first became involved in the development and dissemination of guidelines. These guidelines have been considered as tools for reinstating themselves as scientific leaders in the sector and as partners for other physicians. This project was the keystone for an ambitious reform programme conducted by the FNCLCC. This programme also consisted of the development of research activities, an accreditation programme and the negotiation of new professional statutes for employees. It was a direct response to increasing competition for the CLCCs and to critiques by other stakeholders in the sector (Castel & Friedberg, 2004). In particular, in 1993 a public report (Inspection Générale des Affaires Sociales, 1993) raised the question of maintaining cancer centres, as they were considered to be costly and their added value in the treatment of cancer could not be ascertained. The group of physicians who developed this programme shared a number of distinctive features. First, their medical specializations contrasted with those

of the previous directors of the centre that they were heading. Three of these directors were the first medical oncologists to be appointed as heads of their cancer centres, while the fourth was the first radiotherapist. The four followed three surgeons and a pathologist as directors. In sum, the four had some common, disciplinary interests to defend, as surgery was the still dominant treatment technique in cancer care, and so they were more open than others to the rise of chemotherapy and its implications for the position taken by the CLCCs. Second, the members of this group of reformers had been actively and very successfully involved in research activities, a fact that strongly contrasted with other directors of the National Federation's board. In particular, the three medical oncologists spent some time in the USA, where they had been appointed research fellows at some of the most prestigious American institutions at which new treatments had been developed through experimental research and multi-centre clinical trials (the National Cancer Institute, and the Fred Hutchinson Cancer Research in Seattle, WA).

In 1993, the instigator of the guidelines project was a paediatric oncologist, the director of a cancer centre located in a very competitive region. His motives in developing guidelines were fourfold. First, he shared with his American peers the goal of implementing state-of-the-art practices in every hospital (see Berg, 1995; Daly, 2005), and he could have qualified, using Marks' (1997) expression, as a 'therapeutic reformer'. Indeed, he could not abide by the heterogeneity of the treatments that were prescribed by physicians in his centre as this would imply unequal treatment of patients. He was all the more sensitive to this issue given that the international community of paediatric oncologists had been involved in the question of harmonizing their practices for many years (Castel & Dalgalarondo, 2005). Second, he realized that this heterogeneity was an obstacle to the regional legitimacy of his centre: physicians from other hospitals might question the quality of the advice that CLCC physicians offered them.

There have been two initial reasons to launch this project. The first one is an inner one. We, paediatric oncologists, treated lymphoma with a specific protocol and we saved 75% of the children. In another service, physicians treated adults with lymphoma with another protocol and saved only 25% of patients. Thus, the poor patient was 25% likely to survive if he was over 16, whereas children under 16 were 75% likely to survive. And I did not judge it justifiable that patients be treated differently from one service to another The second reason is an anecdote. Dr X [a head of service in a big public general hospital] called me once and told me: 'I called your centre to ask if it was possible to prescribe birth control pills to a woman with breast cancer and I had three different answers.' Then, he told me: 'As long as you are not able to agree with each other - or at least to argue why you disagree - we will not consider you as the leading hospital.' (Interview with the director of the cancer centre, 1999; author's translation)

Third, this director hoped that the development of guidelines could be used to reshape (and improve) the relationships between his centre and other general hospitals. His centre should appear to other hospitals as a facilita-

tor for treating the more frequently occurring cancers, as a scientific reference centre that could help them treat more complex and rare cancers, and a centre that they could use for referring patients to clinical trials or for specific care.

Physicians who work in other hospitals want us to let them develop their business Our answer is the thesaurus [that is, the treatment protocols], outside consultations . . . it is an openness which leads us to advise a treatment for patients we do not necessarily see. It is an evolution you know well. (Presentation to the medical board of the cancer centre, 1993; author's translation)

Last, in the same presentation he said that guidelines might be mentioned as a reason to convince regulatory bodies to pay for new, expensive treatments.⁵

Other directors were soon convinced of the strategic opportunities furnished by this project for CLCCs. At the national level, they were well aware that it might contribute to re-establishing their legitimacy for the public authorities and the French medical community. At a time when concern for quality in the healthcare system was rising (Setbon, 2000; Robelet, 2001, 2002), CLCCs would be the hospitals that set the example.

At the rime [in 1993, at the beginning of the project], the Social Security agency was about to elaborate guidelines. . . . Tuen, what was our usefulness if, as oncologists, we were not able to produce cancer guidelines? We thus decided together: 'We will produce guidelines by ourselves and respect them before we are forced to do so by someone else.' . . . Furthermore, our oncologists used to say that they were the best. They had to prove it [in producing guidelines]! (Interview with a director, 2002; author's translation)

The SORs were preeminently seen by the directors as a way to set the rules in the oncology sector. Teaching hospitals were particularly threatening to them. From the 1980s onwards, teaching hospitals claimed that cancer centres were not useful anymore, since they had the same missions in the field of cancer care. The teaching hospitals further argued that their physicians, specialized in organ treatments and at the forefront of clinical research, were more qualified to treat (and cure) cancer and to teach other physicians how to do so. In this struggle for legitimacy, the directors conceived of guidelines as a way to reaffirm the usefulness of CLCCs alongside the teaching hospitals. But the guidelines were also a tool to defend the medical approach and the organization of cancer care that CLCCs had developed (Pinell, 2002) and were very proud of. CLCC was an organization based on the participation of every medical specialist in the decision-making process related to a patient's treatment strategy – a multidisciplinary approach. It differed from teaching hospitals, which tended to promote another model in which mastery of the initial decision was given to the organ specialist (and mainly to the surgeon). It therefore comes as no surprise that one of the first guidelines elaborated by the FNCLCC was entitled 'Standards, Options and Recommendations Concerning Good Practices in the Multidisciplinary Organization of Cancer Care' (Chardot et al., 1995).

At the regional level, the directors' expectations were congruent with those of the project leaders: they intended to use the SORs to restore the leadership of their centre and to improve its relationships with general (private and public) hospitals. But they also had specific strategic uses of the SORs depending on the local organizational context. For instance, for some directors who had decided to enhance collaboration with the regional teaching hospital, the SORs helped them to initiate a dialogue between their physicians and those who worked in the teaching hospital. In one region, the elaboration of a common language and common therapeutic attitudes subsequently allowed a new division of cancer care between these two hospitals to be established. In other regions, the directors hoped that the diffusion of guidelines would facilitate the treatment of common cancers by general hospitals, allowing CLCC physicians to concentrate on complex tasks. In contrast, in some sectors the SORs were a tool to restrict the entry of newcomers.

When the organization of cancer care was discussed at the regional level [with regulatory bodies and hospital representatives] two years ago, we had a clear idea about which hospitals we wanted to work with and with which we did not. We came to the discussions with the SORs, saying: 'These are the best practices in oncology and we cannot sell off oncology. Thus, only hospitals which are able to comply with the SORs may care for cancer patients.' If you refer to some rules which you do not have written down and which describe what has to be done, it defuses a bomb. Then, we succeeded in selling the ideas of a multidisciplinary organization of cancer care and a unique regional medical record. ... It is not all achieved, but People have made headway. We may notice that some hospitals have given up the idea of developing oncology, others have grown bigger. (Interview with a vice-director of a CLCC, 2001; author's translation)

Although the SORs were used to achieve various specific results, at their core the guidelines represented for CLCC directors a tool to the reorganization of cancer care in their regions. This was a major motive for adopting the project.

Counter-reactions

As noted earlier, public authorities delegated cancer guidelines to the FNCLCC and approved the SORs, thus reinstating CLCCs as legitimate organizations in the French oncology sector. Medical societies then stepped in and became involved in the development of cancer guidelines. Some of them collaborated with the FNCLCC and others produced their own guidelines. These different attitudes were partially linked with the specific relationships that oncologists had developed previously with the different organ specialties.

The medical societies that have been the most prolific producers of guidelines are dominated by organ specialists, who traditionally oversee the care of particular cancers at the expense of oncologists. They consider oncologists to be merely 'sub-contractors'. Indeed, urologists, gastroenterologists and

haematologists perceived oncologists as competitors. For instance, urologists usually consider surgery to be the best treatment against localized and locally advanced prostate cancers, even though some studies have concluded that surgery and radiotherapy have equivalent risks as treatments. For them, radiotherapy must be an option when surgery is not possible. The respective place of these two treatments for prostate cancers remains controversial (Hakenberg et al., 2006). In the same vein, gastroenterologists consider themselves to be more qualified than oncologists to prescribe drugs for gastrointestinal cancers, since they understand the workings of the corresponding organs better and thus are able to develop treatment protocols accordingly. However, even if they more or less openly criticized the FNCLCC for trying to lead the development of guidelines at the national level, all these societies could not help but to attest to the importance of the SORs.

It is true that there have been conflicts between oncologists and urologists. Things are changing, leading to fewer conflicts. But this remains very much 'physician-dependent'. But there is still a problem: the FNCLCC still tends to think that cancer centres embody cancer care. We answer that they are only one actor amongst others. ... The methodology that the French Association of Urology is using to produce guidelines is becoming more and more credible. We are trying to elaborate them according to the level of evidence, like the SORs. (Interview with a member of the board of the French Association of Urology, 2003; author's translation)

Unlike the first medical societies, the physicians that agreed to participate in the SOR project happened to be either oncologists, or organ specialists who were used to working with oncologists. Since the 1970s, the French Society of Pediatric Oncology had been composed of physicians from cancer centres and teaching hospitals who had developed common research and treatment protocols (Castel & Dalgarrondo, 2005). In the French Society of Gynecologic Oncology, gynaecologists and oncologists have collaborated for a long time, since breast cancer was one of the first cancers that was amenable to treatment with a multidisciplinary approach – combining surgery, radiotherapy and medical treatment (Pickstone, 2007).

However, even if the organization of cancer care influenced the development and implementation of guidelines, it did not determine them. Specialists who once were competitors learned to work together on the development of guidelines. For instance, the French Society of Dermatology finally agreed to co-sign two guidelines with the FNCLCC, although they had been reluctant to do so for a long time. The French Federation of Digestive Oncology also joined the SOR project 3 years ago, after it had published six guidelines itself. One hypothesis for this development lies in the legitimacy that the SOR project gained in the French oncology sector, so that it was difficult for an (isolated) medical society to continue this activity in parallel. Another hypothesis is that the regulatory capacity of evidence-based medicine entailed an inherent reflexivity among participants and resulted in the production of conventions and concerted programmes of action (Cambrosio et al., 2006).

Individual Authority and Guidelines

In the French oncology sector, physicians tend to hold a positive opinion of guidelines (Castel & Merle, 2002; Fervers et al., 2006). They consider that guidelines limit the risk of patients and hospital managers mistrusting the quality of medical practices, and they appreciate the guidelines being developed exclusively by professionals (including those approved by public authorities) and their not being used by public authorities to sanction physicians (Castel & Merle, 2002). One may also hypothesize that this positive opinion is due to the specificity of the pathology and the historical organization of its management,⁶ but to pursue this hypothesis would necessitate a systematic comparison with the development of guidelines for other pathologies. I will argue in this section that participation in the development and implementation of guidelines may also be the result of an individual strategy by physicians to increase the visibility of their specialization in cancer care and in the medical community, and thus to have greater control of patients' 'trajectories', which refers 'not only to the physiological unfolding of a patient's disease but to the total *organization of work* clone over that course' (Strauss et al., 1985: 8). In brief, intra-professional legitimacy is also at stake for the individual practitioner, which partly explains why some become involved in the elaboration and implementation of guidelines while others do not.

The Interests of Cancer Centre Physicians in the SOR Project

The SOR project probably would have failed if the physicians who directed CLCCs had not convinced 'rank-and-file' oncologists to participate. As noted above, nearly two-thirds of the medical community enrolled within a few years. The CLCC physicians we interviewed between 1999 and 2002 did not criticize either the developmental process of the SORs or the quality of the final documents. Instead, they generally expressed pride in their participation. For instance, in 1995, seven of the most significant inter-CLCC scientific groups (specializing in gynaecological tumours, breast cancers, gastrointestinal cancers, genetic oncology, infectious diseases in oncology, statistics and radiology) prominently included participation in the SORs in their annual reports.

There are three reasons for this success. The first is an institutional: CLCC physicians were aware that the oncology sector was becoming more competitive and thus increasingly threatening for them. They believed that the SORs could contribute to re-establishing cancer centres as leaders in the French oncology sector.

The SORs are a wonderful tool and only CLCCs are able to produce it – thanks to our multidisciplinary culture. We receive great credibility when we publish a SOR. ... When we write such texts, we become incontestable in the sector. (Interview with a radiotherapist, 2000; author's translation)

Moreover, the traditional multidisciplinary organization inside CLCCs facilitated the acceptance and support of this project by the participating

physicians. They were also more likely to accept a formalized (collective and multidisciplinary) regulation of their practices.

The guidelines are part of a global evolution, but this does not represent a revolution for us. For other hospitals, it may be a cultural revolution ... : the systematic reference to a document for therapeutic decision-making and the multidisciplinary organization of care are not innate; it requires a specific organization and structure. (Interview with a CLCC surgeon, 2002; author's translation)

The second reason for the success is related to the management of this project, which was not intended to have a top-down organization. On one hand, the whole medical community was invited to get involved. It was not limited to opinion leaders. Furthermore, each guideline had to be validated by every CLCC medical committee (composed of all physicians who worked inside the centre) before it could be published. On the other hand, reformers presented this project to the physicians as a way to improve their practices rather than as a coercive means to control them. Medical evaluations were intended to assess the conformity of medical practices with the SORs, but no sanction was considered.

The third reason is that physicians believed that the SORs helped them in their daily practices. On one hand, their involvement in the development and dissemination process contributed to their hyper-specialization (and authority) with certain cancers. Belonging to a national task force responsible for a SOR enhanced or consolidated a physician's reputation for treating the corresponding cancer (similar to publishing the results of randomized clinical trials in leading medical journals). In the same vein, in order to adapt and implement the SORs, the management of a task force at the regional level contributed to the regional authority of this physician: not only could the physician make clear during discussions that he or she was well-versed in the literature and aware of the latest clinical trials, but at the same time the physician could also demonstrate to regional colleagues an inclination to help them – thus exhibiting a kind of altruism.

[A medical leader] is someone who works a lot and who works well. We may evaluate this through his care for the patients we refer to him. But he is also someone who participates in task groups and in protocols. And he is someone who knows how to share his knowledge. The number of publications is one criterion but it is not the only one. What counts more is showing one's intention of working ... and on the way one is trying to be acknowledged as a leader. There is also the human touch. (Interview with an oncologist in a general hospital, 2003; author's translation)

Because of a significant increase in the number of papers related to randomized clinical trials in the early 1990s, it was difficult for even CLCC physicians to be well informed on current treatments for every cancer. Given the fact that most of them specialized only in certain kinds of cancers, they tended to use the SORs as a resource for novel scientific information about the cancers with which they were less familiar.

I am an oncologist, but I do not know 10% of all the decisions to take in oncology. We are hyper-specialized. For instance, I am specialized in prostate cancer. But when it departs from your hyper-specialization, it becomes very complicated. Guidelines will be referred to by physicians when the case departs from their specialty. (Interview with a radiotherapist, 2000; author's translation)

In particular, cancer centre physicians were interested in using the SORs for external counselling. When they had to give advice to peers on cancers in which they were not specialized, the SORs constituted a precious resource.

Opportunistic Uses of Guidelines

Other physicians might also perceive the strategic advantage of participating in the regional process of implementing guidelines. Organ specialists who wanted to specialize further in oncology, or oncologists who worked in public or private general hospitals and who therefore had to be trusted by surgeons, might choose to participate in the regional implementation process in order to acquire local credibility – to convince colleagues who might refer patients to them that they were competent to prescribe the correct treatments. There is no available study that compares overall survival rates among different hospitals in France. A doctor's reputation therefore rests on other (social) mechanisms, such as participation in clinical research, which can allow a physician to acquire a distinctive reputation through publication or other communications. Participation in oncology networks in France – which develop guidelines and promote the creation of multidisciplinary (and sometimes multi-hospital) medical staff for making therapeutic decisions – can be viewed as another medical strategy for restoring medical authority. Physicians who were interviewed said they participated in that process in order to increase their knowledge, to appear competent when talking with their peers and to acquire a good reputation.

Participating in a regional task force for implementing the SORs enabled physicians who worked in general healthcare organizations to have privileged and personal access to the knowledge and experience of their academic counterparts. Guidelines facilitated the sharing of specialized knowledge, so that 'rank-and-file' physicians depended less on the personal advice of their illustrious colleagues about the most frequent types of cancers. We may then take Segrestin's (1996) analysis of the International Organization for Standardization (ISO) norms as applicable to guidelines as well: the 'logic' of both kinds of tools consists of sharing knowledge which previously had been mastered only by experts.

If someone wants to practice traditional surgery, [the work on guidelines] is not that important. But if someone wants to specialize in oncology, then ... It is changing so fast! Nobody is able to attend all scientific meetings; nobody is able to read the whole published literature. ... If someone wants to 'hyper-specialize', he has to know up-to-date treatments and nobody can do it on their own. (Interview with a private surgeon, 2003; author's translation)

Such participation was a resource for physicians in their efforts to gain greater control over the management of patient 'trajectories' in both of Strauss' senses of the course of illness and the temporal organization of medical work (Strauss et al., 1985). This allowed them to intervene more intensively in the work of their colleagues.

First, they could acquire greater legitimacy than other physicians. Some found the 'network' label useful for convincing their patients and peers (general practitioners, surgeons and diagnostic physicians, among others) that they were as competent as, say, physicians with academic training in the subject. Such authority relied, then, more on local, collective norms than on individual competence. By contrast, organ specialists (gastroenterologists, surgeons, and so on), for whom tending to cancer patients did not represent a major part of their activity, did not get involved in networks.

The network is useful to attest my competencies. I decided to adhere to it as soon as it began. ... Surgeons, when they send me a patient, know that some regional standards exist. Thus, I am writing in the medical record: 'standard of [the regional network]'. It legitimizes my decision. They know that every patient is treated in the same way. (Interview with a medical oncologist, 2003; author's translation)

Second, during task group discussions, they had the opportunity to break the monopoly over cancer care held by the academic physicians. The first social mechanism was negotiation, as Timmermans and Berg (2003) have shown: the organ specialists negotiated with academic physicians so that guidelines did not prescribe treatments that were too complex and that could not be implemented by general facilities (clinical trials, intensive chemotherapies, up-to-date diagnostic examinations, and so on). The second mechanism was trust: during discussions, the organ specialists got a chance to convince their (specialized) colleagues that they were competent and might even have some expertise. For example, some academic physicians who were interviewed said that before this process they tended to mistrust their colleagues who worked in general healthcare organizations, believing that they were insufficiently competent. However, after the discussions, they said they were more inclined to allow such physicians to take care of patients who suffered 'standard' cancers (such as colon cancer or breast cancer) or even to re-assign such patients to them.

This allowed me to meet some physicians who worked in general hospitals and whom I had not known before. It helped me to avoid certain prejudices. In the medical world, it is terrible how fast we label people! 'The private sector does not think anything but money!' 'The public sector does not do anything at all!' But, when we came to know each other, we realized that people share a common interest: the patient! And we also realized that everybody worked hard. (Interview with an academic Jung specialist, responsible for a regional task group, 2003; author's translation)

Last but not least, the guidelines constituted a robust argument for physicians, so that they could try to change the behavior of their peers and influence the

management of patients. For instance, during multidisciplinary staff meetings, physicians were able to argue that a therapeutic decision was not 'evidence-based' and thus try to change it, even if the patient was not under their care. Physicians who wanted to propose a 'non-conforming' treatment had to justify it. Another example lies in the changing relationships between surgeons and radiotherapists in an area in which treatment protocols had become broad. Surgeons grumbled about the growing encroachment of radiotherapists on their autonomy. Radiotherapists dared to ask them to perform new operations when surgical margins were insufficient to meet the guidelines they had available. Another recurrent example had to do with relationships between diagnostic specialists and clinicians: the latter were more prone to use guidelines to frame their colleagues' activities in terms of the timeliness and quality of their examination reports.

[The regional protocols] make clear that I am not manie or obsessive when I am asking them for some quality criteria: these criteria are written in the guidelines! For example, I must have exam results in pathology or in radiology fifteen days later. As for pathologists, when we ask them to write some details, it is not because we are maniacs, it is only because it has to be that way. (Interview with a private surgeon, 2003; author's translation)

Of course, this does not mean that physicians were compelled to obey their colleagues if they relied on guidelines. Other types of authority still existed in the sector. For example, when adapting a protocol, physicians could invoke the uniqueness of every therapeutic relationship. Academic physicians could rely on charisma or persona! prestige, and some of them even refused to participate in networks that implemented guidelines. They preferred to organize frequent meetings in which they gave persona! advice on specific cases that were brought by non-specialized physicians. Nonetheless, our observations made clear that rational-legal authority (Weber, 1968 [1922]: 215-23) is becoming dominant in the French oncology sector. More physicians find it increasingly legitimate to justify therapeutic decisions and advice by reference to the guidelines and medical literature. Furthermore, guidelines facilitate an increasing 'lateral control regime' (Lazega, 2000) among physicians. In contrast to the previous situation when physicians had limited opportunities to meet with and evaluate one another's work (Freidson & Rhea, 1963, 1965), guidelines represent a device that increases interdependency among physicians and acts as a frame of reference with which to judge colleagues. This analysis thus seems compatible with the results of some medical, quantitative studies on the impact of cancer guidelines on medical practices. While some national reports by the French Health Insurance complained about a global, low compliance rate of practices with national cancer guidelines, and especially with the SORs (Caisse Nationale d'Assurance Maladie des Travailleurs Salari, 2003, 2005), a set of medical audits conducted in two regions argued that a local implementation strategy might increase the degree of compliance with guidelines (Ray-Coquard et al., 2002, 2005). I hypothesize that this greater compliance is due to an increase in the local interdependency

and mutual control that the implementation process provoked among the involved practitioners.

Conclusion

Medical standardization not only alters relational dynamics between physicians and non-physicians (patients, hospital managers and regulatory bodies), but it may also alter relationships among physicians themselves. In line with the reports of Timmermans and Berg (2003) and Cambrosio et al. (2006), this case study shows that standardization improves relationships among physicians (for instance, through task groups) and influences the development of shared conventions that facilitate such interpersonal exchanges. Standardization in the medical field allows for an improvement in relationships between actors through mechanisms of collective learning, much as in the industrial sector (Segrestin, 1997; Cochoy et al., 1998; Brunsson & Jacobsson, 2000).

This study of standardization in French oncology has also shown the value of taking political considerations into account when studying the development of standardized guidelines. Timmermans and Berg (2003: 21) also proposed 'a study of the politics of standardization in practice', but they did not define power, nor did they study the concrete processes of negotiation through which some physicians try to use standards to foster collaboration with others for their own benefit. Here, I considered an interactive and strategic concept of power, which is a basic ingredient of exchange relations between actors placed in a context of strategic interdependence (Crozier, 1965; Boudon & Bourricaud, 1982; Chazel, 1992). Power in this conception is the unequal and negotiated exchange of capacities for action through which every member tries simultaneously to constrain other members of an organization, in order to satisfy expectations and avoid being constrained by the others (Crozier & Friedberg, 1980; Friedberg, 1997). Strategy and resources are, therefore, two key ideas related to this concept of power. In the case of French oncology, I established that standards were used as strategic resources by professional actors at the expense of others in order to improve their position or 'jurisdiction' (Abbott, 1988). The aims of such strategies were: (1) maintaining a sufficient volume of activity; and (2) increasing control over therapeutic decisions. CLCCs and oncologists benefited the most from these standards. This may be explained by the fact that they had more resources at their disposal to develop guidelines (in particular, their orientation toward clinical research and their traditional, multidisciplinary organization). However, as I also mentioned, some organ specialists were also able to use guidelines. According to this theoretical perspective on power, even actors placed in a favourable situation could not eliminate the capacity of other actors to resist. This explains why negotiations took place at every level of analysis: national, regional and local. By placing concrete exchange and bargaining relations at the core of the analysis, and showing how social

control is continually challenged and (re)produced, the study demonstrated that standardization is not necessarily incompatible with local specificities and variations, and may even enhance them (see also Timmermans & Berg, 1997; Zuiderent-Jerak, 2007).

Notes

I would like to thank Alberto Cambrosio, Peter Keating, Thomas Schlich and George Weisz for the opportunity to present an earlier version of this paper at their conference, 'The Institutions of Objectivity in Medicine: Informal and Formal Modalities of Regulation', at McGill University (Montreal), 19-22 April 2007. I also thank Charles Rosenberg for his useful comments on that occasion, and Michael Lynch and the anonymous reviewers whose comments and suggestions helped me to clarify my arguments. I thank Erhard Friedberg for his helpful advice during this research, and Connie Chow and Martha Zuber for their editing assistance.

1. While there is much to say about the ambiguity of guidelines for patients and their representatives (for a synthesis of these issues, see Berg [1997] and Timmermans & Kolker [2004]), the issue falls beyond the scope of this paper. Whereas some proponents of evidence-based medicine argue that guidelines may improve the appropriateness of healthcare practice, other actors fear that they may hinder the consideration of therapeutic alternatives that would be more appropriate to the specific needs of the individual patient. Sociologists diverge in their opinions as to whether protocols reinforce or weaken professional authority.
2. The alliance between cancer centres and the League Against Cancer has historical and institutional roots, as both were created at the same time and by the same actors (see Pinell, 2002). At the local level, CLCC directors are frequently also presidents of the professional associations for their specialities. In 1997 at the national level, the former president of the Federation became president of his speciality association, but this alliance was also due to congruence between the strategic development programme of the association and the reform programme of cancer centres (Castel & Friedberg, 2004).
3. These guidelines are called 'Standards, Options and Recommendations' (SOR) since they are classified into three categories. A clinical stance is called a 'Standard' when there is unanimity concerning its benefits, its inappropriateness or its potential danger. An 'Option' is so-called when a majority of physicians agrees with the benefits, inappropriateness or dangers of a specific stance. 'Recommendations' represents a choice by experts from different options. Each category is explicated by a degree of evidence, depending on the available scientific data.
4. Since mid 2008, the situation has changed: the French National Cancer Institute (NCI) is now the administrator of the SOR project. However, as the website mentions (<www.sor-cancer.fr/>), the SORs were created by the FNCLCC, which still maintains a decisive role in the project since it is one of the three members of the leading consortium, together with the French NCI and the National League Against Cancer.
5. In the same vein, Berg and colleagues (2000) showed that guidelines had been tools for insurance physicians in the Netherlands – used to restore the legitimacy of their practices, which had been criticized by non-physicians.
6. To mention two characteristics: (1) oncology is a domain that from its beginning was 'science rich' (Pinell, 2002) and was especially closely linked with the development of clinical research (Cambrosio, 2005; Keating & Cambrosio, 2007; Pickstone, 2007) so that oncologists were probably more apt to accept 'a shift from pathophysiology to epidemiology with guidelines' (Timmermans & Kolker, 2004: 177); (2) the increasing number of clinical trials for cancer remedies legitimates the need for tools to synthesize the evolution of medical knowledge.
7. By 'academic physicians', I mean doctors working in hospitals whose missions are research and teaching, such as teaching hospital and cancer centre physicians.

References

- Abbott, Andrew (1988) *The System of Professions* (Chicago, IL: University of Chicago Press).
- Berg, Marc (1995) 'Turning a Practice Into a Science: Reconceptualizing Postwar Medical Practice', *Social Studies of Science* 25(3): 437-76.
- Berg, Marc (1997) *Rationalizing Medical Wbrk: Decision Support Techniques and Medical Practices* (Cambridge, MA: MIT Press).
- Berg, Marc, Klasien Horstman, Saskia Plass & Michelle van Heudsen (2000) 'Guidelines, Professionals and the Production of Objectivity: Standardization and the Professionalism of Insurance Medicine', *Sociology of Health & Illness* 22(6): 765-91.
- Baudon, Raymond & François Bourricaud (1982) *Dictionnaire Critique de la Sociologie* (Paris: Presses Universitaires de France).
- Bourret Pascale (2005) 'BRCA Patients and Clinical Collectives', *Social Studies of Science* 35(1): 41-68.
- Brunsson, Nils & Bengt Jacobsson (eds) (2000) *A Wbrld of Standards* (Oxford: Oxford University Press).
- Caisse Nationale d'Assurance Maladie des Travailleurs Salariés (2003) *Faits Marquants* (Paris: CNAMTS).
- Caisse Nationale d'Assurance Maladie des Travailleurs Salariés (2005) *La Chimiothérapie Anticancéreuse en France en 2002: Organisation des Soins et Qualité de la Prise en Charge* (Paris: CNAMTS).
- Cambrosio, Alberto (2005) 'Rationalisation et Médecine des Preuves en Oncologie: Quelques Remarques à Propos des Pratiques Biomédicales (Commentaire)', *Sciences Sociales et Santé* 23(4): 41-48.
- Cambrosio, Alberto, Peter Keating, Thomas Schlich & George Weisz (2006) 'Regulatory Objectivity and the Generation and Management of Evidence in Medicine', *Social Science & Medicine* 63(1): 189-99.
- Castel, Patrick & Sébastien Dalgalarondo (2005) 'La Dimension Politique de la Rationalisation des Pratiques Médicales', *Sciences Sociales et Santé* 23(4): 5-40.
- Castel, Patrick & Erhard Friedberg (2004) 'Institutional Change as an Interactive Process: The Modernization of the French Cancer Centers', *SCANCOR Institutions Conference*, Stanford University, March 26-27.
- Castel, Patrick & Anne Merle (2002) 'Quand les Normes de Pratiques Deviennent une Ressource pour les Médecins', *Sociologie du Travail* 44(2): 337-55.
- Chardat, Claude, Béatrice Fervers, Pierre Bey, Jacques S. Abbatucci & Thierry Philip (1995) 'Standards, Options and Recommendations for the Multidisciplinary Organization of Oncology', *Bulletin du Cancer* 82(10): 780-94.
- Chazel, François (1992) 'Pouvoir', in Raymond Boudou, *Traité de Sociologie* (Paris: Presses Universitaires de France): 195-226.
- Cochoy, Franck, Jean-Pierre Garel & Gilbert de Terssac (1998) 'Comment l'Écrit Travaille l'Organisation: le Cas des Normes ISO 9000', *Revue Française de Sociologie* 39(4): 673-99.
- Crozier, Michel (1965) *The Bureaucratic Phenomenon* (Chicago, IL: University of Chicago Press).
- Crozier, Michel & Erhard Friedberg (1980) *Actors and Systems: the Politics of Collective Action* (Chicago, IL, & London: University of Chicago Press).
- Crozier, Michel & Erhard Friedberg (1995) 'Organizations and Collective Action', *Research in the Sociology of Organizations* 13: 71-92.
- Daly, Jeanne (2005) *Evidence-based Medicine and the Search for a Science of Clinical Care* (Berkeley, CA: University of California Press).
- Emerson, Richard M. (1962) 'Power-Dependence Relations', *American Sociological Review* 27(1): 31-41.
- Fédération Nationale des Centres de Lutte Contre le Cancer (1994) *Rapport d'activité 1993* (Paris: FNCLCC)
- Fervers, Béatrice, Christine Bara, Stéphane Loiseau & Sophie Théobald (2006) 'Évaluation de la place des Recommandations de Pratique Clinique et Référentiels en cancérologie dans la pratique clinique', *2èmes Assises Nationales des Réseaux de Cancérologie* (Nancy, 21-22 September).

- Freidson, Eliot & Buford Rhea (1963) 'Processes of Contrai in a Company of Equals', *Social Problems* 11(2): 119-31.
- Freidson, Eliot & Buford Rhea (1965) 'Knowledge and Judgment in Professional Evaluations', *Administrative Science Quarterly* 10(1): 107-24.
- Friedberg, Erhard (1997) *Local Orders: The Dynamics of Organized Action* (Greenwich, CT: JAI Press).
- Gouldner, Alvin W. (1954) *Patterns of Industrial Bureaucracy* (Glencoe, IL: Free Press).
- Hakenberg, Oliver W., Michael Frohner & Manfred P. Wirth (2006) 'Treatment of Locally Advanced Prostate Cancer: The Case for Radical Prostatectomy', *Urologia Internationalis* 77(3): 193-99.
- Inspection Générale des Affaires Sociales (1993) *UApport des Centres de Lutte Contre le Cancer à la Politique de Lutte Contre le Cancer. Report no. 93158* (Paris: IGAS).
- Jamous, Haroun & Bernard Peloille (1970) 'Professions or Self-perpetuated Systems? Changes in the French University-Hospital System', in John A. Jackson (ed.), *Professions and Professionalization* (London: Cambridge University Press): 109-52.
- Keating, Peter & Alberto Cambrosio (2007) 'Cancer Clinical Trials: The Emergence and Development of a New Style of Practice', *Bulletin of the History of Medicine* 81(1): 197-223.
- Kerleau, Monique (1998) 'L'Hétérogénéité des Pratiques Médicales, Enjeu des Politiques de Maîtrise des Dépenses de Santé', *Sciences Sociales et Santé* 16(4): 5-34.
- Lazega, Emmanuel (2000) 'Rule Enforcement among Peers: A Lateral Contrai Regime', *Organization Studies* 21(1): 193-214.
- Marks, Harry (1997) *The Progress of Experiment: Science and Therapeutic Reform in the United States, 1900-1990* (Cambridge, MA: Cambridge University Press).
- Pfeffer, Jeffrey & Gerald Salancik (1978) *The External Control of Organizations* (New York: Harper and Row).
- Pickstone, John (2007) 'Contested Cumulations: Configurations of Cancer Treatments through the Twentieth Century', *Bulletin of the History of Medicine* 81(1): 164-96.
- Pinell, Patrice (2002) *The Birth of a Scourge: The Anti-cancer War in France 1890-1940* (London & New York: Routledge).
- Ray-Coquard, Isabelle, Thierry Philip, Guy de Laroche, X. Froger, J.P. Suchaud, et al. (2002) 'A Controlled "Before-After" Study: Impact of a Clinical Guidelines Programme and a Regional Cancer Network Organization on Medical Practice', *British Journal of Cancer* 86(3): 313-21.
- Ray-Coquard, Isabelle, Thierry Philip, Guy de Laroche, X. Froger, J.P. Suchaud, et al. (2005) 'Persistence of Medical Change at Implementation of Clinical Guidelines on Medical Practice: a Controlled Study in a Cancer Network', *Journal of Clinical Oncology* 23(19): 4414-23.
- Robelet, Magali (2001) 'La Profession Médicale Face au Défi de la Qualité: une Comparaison de Quatre Manuels de Qualité', *Sciences Sociales et Santé* 19(2): 73-98.
- Robelet, Magali (2002) *Les Figures de la Qualité des soins. Rationalisation et normalisation dans une économie de la qualité*. Unpublished PhD Dissertation, Université Aix-Marseille II.
- Segrestin, Denis (1996) 'La Normalisation de la Qualité et !'Evolution de la Relation de Production', *Revue d'Economie Industrielle* 75: 291-307.
- Segrestin, Denis (1997) 'L'Entreprise à !Epreuve des Normes de Marché', *Revue Française de Sociologie* 38(3): 553-85.
- Selznick, Philip (1949) *TVA and the Grass Roots* (Berkeley, CA: University of California Press).
- Setbon, Michel (2000) 'La Qualité des Soins, Nouveau Paradigme de l'Action Collective?', *Sociologie du Travail* 42(1): 51-68.
- Strauss, Anselm L., Shizuka Fagerhaugh, Barbara Suczek & Carolyn Wiener (1985) *The Social Organization of Medical Work* (Chicago, IL: University of Chicago Press).
- Timmermans, Stefan & Marc Berg (1997) 'Standardization in Action: Achieving Local Universality through Medical Protocols', *Social Studies of Science* 27(2): 273-305.
- Timmermans, Stefan & Marc Berg (2003) *The Gold Standard. The Challenge of Evidence-based Medicine and Standardization in Health Care* (Philadelphia, PA: Temple University Press).

- Timmermans, Stefan & Emily S. Kolker (2004) 'Evidence-based Medicine and the Reconfiguration of Medical Knowledge', *Journal of Health and Social Behavior* 45 (supplement): 177-93.
- Weber, Max (1968 [1922]) *Economy and Society* (New York: Bedminster).
- Weisz George (2005) 'From Clinical Counting to Evidence-based Medicine', in Gérard Jorland, Annick Opine! & George Weisz (eds), *Body Counts: Medical Quantification in Historical and Sociological Perspectives* (Montreal: McGill-Queen's University Press): 377-93.
- Zuiderent-Jerak, Teun (2007) 'Preventing Implementation: Exploring Interventions with Standardization in Healthcare', *Science as Culture* 16(3): 311-29.

Patrick Castel is a researcher at Sciences Po, in the Center for the Sociology of Organizations. His research interests include collaboration and competition among physicians, rationalization in the healthcare sector, and organizational and institutional change. Key publications include: 'Medicina e regole sulle pratiche: le dimensioni dimenticate', in *Studi Organizzativi* 9(1) (2007): 111-32; and 'Le Médecin, son Patient et ses Pairs. Une Nouvelle Approche de la Relation Thérapeutique', in *Revue Française de Sociologie* 46(3) (2005): 443-67.

Address: Sciences Po, Centre de Sociologie des Organisations, 19 rue Amélie, 75007 Paris, France; fax: +33 147 05 3555; email: p.castel@cso.cnrs.fr