STON STUDIES IN THE PHILOSOPHY AND HISTORY OF SCIENCE

*Editors*

ROBERT S. COHEN, *Boston University*
JÜRGEN RENN, *Max Planck Institute for the History of Science*
KOSTAS GAVROGLU, *University of Athens*

*Managing Editor*

LINDY DIVARCI, *Max Planck Institute for the History of Science*

*Editorial Board*

THEODORE ARABATZIS, *University of Athens*
ALISA BOKULICH, *Boston University*
HEATHER E. DOUGLAS, *University of Pittsburgh*
JEAN GAYON, *Université Paris 1*
THOMAS F. GLICK, *Boston University*
HUBERT GOENNER, *University of Goettingen*
JOHN HEILBRON, *University of California, Berkeley*
DIANA KORMOS BUCHWALD, *California Institute of Technology*
'HRISTOPH LEHNER, *Max Planck Institute for the History of Science*
PETER MCLAUGHLIN, *Universität Heidelberg*
AGUSTÍ NIETO-GALAN, *Universitat Autònoma de Barcelona*
NUCCIO ORDINE, *Universitá della Calabria*
ANA SIMÕES, *Universidade de Lisboa*
JOHN J. STACHEL, *Boston University*
SYLVAN S. SCHWEBER, *Harvard University*
BAICHUN ZHANG, *Chinese Academy of Science*

VOLUME 302

For further volumes:
www.springer.com/series/5710

Marcel Herbst
Editor

# The Institution of Science and the Science of Institutions

## The Legacy of Joseph Ben-David

Springer

# Contents

# Part I
# Prologue

# Chapter 5
# The Ongoing Tension: Clinical Practice and Clinical Research

**George Weisz**

**Abstract** Ben-David had studied the medical sciences on a number of occasions and traced their impact on the development of the sciences and professions in general. The chapter exemplifies a range of aspects which Ben-David had addressed: the interplay of teaching and research; the relative position of basic research versus applied research; the role of the sciences and professions within higher education; and the professional ethos regarding research and service.

Medicine stood at the beginning of modern science with its propensity to specialize. This brought the medical profession into an internal conflict which foreshadowed tensions subsequently: the curative aspect of medicine, the necessities to base practice on evidence, the comprehensiveness of medicine versus various specializations, interests of an evolving pharmaceutical industry, aims of public health, or the foci and incentive structures of health insurance programs. The chapter focuses on some of these tensions as they developed at the interface between practice and research orientation and as they affect medical schools.

Joseph Ben-David wrote frequently about medical researchers. They intrigued him because they played multiple sociological roles and were frequently participants in the hybrid science that he considered a major source of innovation. Medical practice, he believed, could itself be a source of creative inspiration. In an article published in 1960, he wrote: "This analysis of the beginnings of bacteriology and psychoanalysis lends general support to the proposition that contact with practice may be important in reorienting research toward the investigation of new and fruitful problems" (Ben-David 1960a). But he was also acutely aware that this co-existence of roles was difficult and oftentimes problematic. In 1966 Ben-David published a relatively modest article "Socialization and Career Patterns as Determinants of Productivity of Medical Researchers" (Ben-David 1991) based on studies of Israeli medical researchers.[1]

[1] The paper was presented at the Sixth World Congress of Sociology, held in Evian, September 4–1, 1966.

G. Weisz (✉)
History of Medicine, Social Studies of Medicine, McGill University, Montreal, Quebec, H3A 1X1 Canada
e-mail: george.weisz@mcgill.ca

M. Herbst (ed.), *The Institution of Science and the Science of Institutions*, Boston Studies in the Philosophy and History of Science 302,

Here he highlighted the tensions between the functions of clinical practice and clinical research:

> "But even the trained researcher usually works in a hospital, the main job of which is to cure. Consequently, the occupational role of the clinical researcher contains both the elements of practice and of scientific work. These two components of the role are governed by different sets of norms and values and link the doctor to two different systems of professional communication. This results in an inner conflict within the role image of the clinical researcher and a considerable strain in the role pattern. Yet this role pattern seems to be more efficient than the role patterns in other fields of applied science" (Ben-David 1991, 71).

He suggested that the roles were so different that a process of 'resocialization' was required by any M.D. entering the research field:

> "[...] an important aspect of the resocialization consists of linking the beginning researcher into a network of scientific communication, thus inducing him into an internal scientific community and exempting him to some extent from the standards and norms of the professional community of local medical practitioners" (Ben-David 1991, 72–73).

In fact Ben-David and his collaborator found the post-doctoral training was most effective when taken in a basic research environment. In his conclusions, Ben-David moved from empirical data based on the Israeli case to broader generalizations:

> "In large scientific centers there may arise more continuous schemes of training, and sizable groups of clinical researchers in each field may be found to form scientific subcommunities of their own. It is nevertheless our feeling that essentially the problem of hybrid nature of clinical research is general. There is in all cases an element of institutionally generated conflict through turning out practicing professionals and then putting them to work in research" (Ben-David 1991, 88).

Ben-David's insight has broad implications. The practice/research dichotomy has been the source of profound tensions at the core of medical education during the past two hundred years and has shaped both the training of physicians and medical practice. In this essay I would like to explore a few of the many facets of this tension, presenting my material as a series of case studies. I will begin more or less at the beginning with formation of the world's first large-scale medical research community in Paris during the early years of the 19th century. Among the questions that historian have explored is the mechanism by which doctors came to see at least some of their patients as research subjects.

## Case 1: Creating Patient-Subjects

Unlike historians of German science, historians of science in France rarely speak of "a Great Transition" that created professional science in that country. This is because the process occurred gradually, starting in the eighteenth century and accelerating after the French Revolution, but in the absence of any single institutional innovation comparable with the rise of the German research university. Ben-David (1970), in a classic work of historical sociology, explicitly denied that much in the



way of institutional change took place in post-Revolutionary Paris, claiming that the "great upsurge of French science following the Revolution was only indirectly related to the new institutions of higher education established between 1794 and 1800, and those institutions did not constitute a beginning of organized patterns of scientific work. They were rather the culmination of eighteenth century patterns of scientific work". This explains why French science, according to Ben-David and many others, began after 1830 to decline from its position of international scientific leadership (Ben-David 1984/1971). No one bothers to discuss medicine in this context. This is, I suspect, partly because it lacked the epistemological status of the physical sciences usually considered to be at the center of this shift, and also because medical research was 'professionalized' in clinics rather than universities or laboratories and remained subsidized to a considerable degree by private medical practice. It would take us well beyond the scope of this essay to discuss these issues in detail. I will, however, make three points. First, it is certainly the case that developments in nineteenth-century French science built on eighteenth-century attitudes and institutional patterns, not least in their openness to specialized research. Second, medicine was not just part of the milieu of amateur science from which 'real' disciplines such as physics and chemistry emerged; it, too, went through a comparable process of professionalization and discipline formation. Third, however one chooses to evaluate the overall institutional system devoted to science and technology in France, Paris medicine brought into being a new institutional form that was in its way as revolutionary as the German research university, even if it proved to be less enduring.

Early in the nineteenth century, Paris became a center of knowledge production of unprecedented size and scope, based on a network of interconnected institutions and individuals. The Faculty of Medicine, the Sorbonne, the School of Pharmacy, the *Collège de France*, and the *Muséum d'Histoire Naturelle*, as well as the municipal hospital system, shared students, professors, and junior staff; all became part of a common career structure for the elite that I have described elsewhere (Weisz 1995). Around these institutions revolved a flourishing world of medical societies, private medical teaching, and medical periodicals that observed closely and often criticized harshly the elite of official medicine. Only those with formal teaching positions can be considered fully 'professional researchers' in the modern sense (although many of these also had flourishing private practices). And even for these, as well the much larger number of individuals who did not hold posts providing substantial salaries, medical practice not only supplied the data of clinical research but also frequently subsidized it financially. Nonetheless, these limitations in no way diminish either the novelty or the vigor of this new type of research community.

A research community—numbering many hundreds of individuals—was unique to Paris during the first half of the 19th century. The Paris Faculty of Medicine, the largest medical school in the world, had more than two dozen full professors and many junior personnel. The Parisian hospital system employed several hundred doctors and surgeons. To these one must add all the ambitious students and graduates who were seeking to make their mark in the world of academic medicine. In this competitive world, nepotism thrived and some nonentities managed to achieve notable success; but it was nonetheless deemed imperative to produce new knowledge.

Critics argued that many of the structural characteristics of the institutional system were counterproductive and harmful. But no one disputed that the goal was to advance knowledge. And few disputed that what was needed was 'positive' knowledge, based on careful empirical observation of many different clinical cases and postmortem dissections. Some might criticize mere empiricism and argue for the importance of theory in making sense of empirical observation, but no one of any stature suggested that empirical observation was less than central. As a consequence, many hundreds of individuals were, at all levels of the system, seeking to make or consolidate elite careers through various kinds of clinical research and teaching. One of the most important consequences of this shift to new forms of practice/research, I have argued elsewhere (Weisz 2006), was the spread of medical specialties which allowed individual clinicians to see the large numbers of cases that were now a requirement of rigorous clinical research.

This institutional context goes some way toward explaining the spread of medical research within institutions of medical education in Paris as well as the transformation of patients into research subjects. But it does not explain the transformation in doctor-patient relations that accompanied this shift. Foucault (1975/1963) has famously described this change as the birth of the "medical gaze", the process of objectifying the patient so that diagnosis and treatment could take place in new ways. Foucault describes rather than explains this shift and he also situates it rather earlier than is justified by the historical record. Furthermore he neglects a key aspect of the transition: the need to reconcile the physician's commitment to the patient's well-being, the traditional approach to medical ethics (though rarely formalized in the early 19th century) with a parallel concern to advance medical science. The apparent tension between these two ideals would become a formative element in the birth of contemporary bioethics a century and a half later but it troubled nineteenth-century physicians relatively little. Unless a physician did something truly egregious to patients, transmitting microorganisms or cancer cells to healthy patients for instance, there was little public or professional outrage.[2]

A group of British sociologists writing in the 1970s attempted to provide an answer to a related question: how and why did the patient and her symptoms lose their privileged position at the centre of medicine, to be replaced by anatomical lesions or the results of laboratory tests (Waddington 1973; Jewson 1974, 1976)? The answer they provided is based on social class and can be applied as well to the closely related question of how patients became research subjects. According to this explanation, it was the medicalization of large urban hospitals that made a new sort of research possible. Not only did it provide doctors with large numbers of patients and bodies for post-mortem dissection, a prerequisite for the new style of clinical research, but medicalizing institutions housing the poor created a fundamental disequilibrium in the doctor-patient relationship. Unlike the patronage relationships

[2] The most important study of this subject in the American context, Lederer (1995), overestimates in my view the degree of consensus that existed within the medical community about what was permissible and what was not.



between affluent clients and physicians, or even the relative equality between paying patients and doctors, poor hospital patients had few options and little leverage in deciding what was done to them. The poor certainly merited and frequently enjoyed physician commitment to their well-being. But social inequalities made such commitment incomplete and flexible. Since hospital patients were receiving free treatment paid for by society, making their bodies available for teaching and research purposes was seen by many as a fair bargain that allowed these patients to give back some of what they were receiving from society. One consequence was that patients' bodies replaced oral accounts of illness as the basis of clinical observation and judgment. A corollary to this proposition was that where such social inequalities did not exist, clinical research was difficult to introduce. The lack of such institutions in late 18th-century Britain, it was posited, and the widespread survival of patronage relations in which wealthy patients were the dominant agents explains the relative absence of high level research in that country during this period. This argument is not totally convincing on empirical grounds (hospital patients were not necessarily passive, and private patients could be made subservient by serious illness or an authoritative physician). Nor is it clear that there was a significant discrepancy between clinical research in Paris and other great cities of Europe. But this explanation has the merit of at least seeking to answer a critical question; how could the commitment of the physician to his patient leave room for research practices that privileged the future good of society as much if not more than the immediate interests of the patient?

There are of course other possible lines of argument. One that seems particularly convincing to me is the relatively thin line between 'normal', acceptable therapeutic experimentation which was in the patients' own best interest and experimentation whose only goal was to advance science. The experience of most doctors and patients was that many therapies worked some of the time. This was hardly surprising since every patient and indeed every case of a disease was thought to be somewhat unique. Even after 1840 when clinical counting of therapeutic results became common, there was still enormous variation in clinical results. Without a clear concept of statistical efficacy to define acceptable practices (not to mention lack of standardized practices), physicians had enormous margin to maneuver, trying new therapies or adapting old ones to new conditions. As long as one could make a plausible case that an experimental procedure was done for therapeutic purposes, there was little cause for outrage and no clear contradiction between the physician's dual roles as a healer and researcher. As we now know, this situation began to change radically in the mid-1960s.

## Case 2: Research as a Source of Professional Conflict

Professional hierarchies are not necessarily based on research roles. In the UK, professional power flowed traditionally from control of key institutions. During the course of the 19th century, membership in the Royal College of Physicians and

.he Royal College of Surgeons gradually evolved into the domination of voluntary ıospitals where medical education took place. Hospital practice and teaching did ıot necessarily involve research or disciplinary specialization and the British elite ·esisted such trends until the early 20th century. But elsewhere research and spe-:ialization became increasingly associated with institutions of medical education. It ɔegan with the German research university in the 1850s and 60s; French institutions ıttempted to keep up with major reforms of higher education from the late 1870s on. In the USA medical elites struggled during the second half of the century to develop local research. Everywhere, intra-professional conflict between elites and organized ɔractitioners revolved frequently around issues of research expertise.

The American academic medical elite, at the periphery of international medi-:al science, was particularly enthusiastic about research and specialization in med-ical schools (though there were bitter conflicts about specialized medical practice). Nonetheless the process created significant tensions within American medicine. The AMA sought during the 19th century to be the single, unifying body representing the medical profession as well as the central locus of medical knowledge in America. In 1860, as part of its drive to introduce more scientific discussions at meetings, it :reated six sections devoted to specialized disciplines. While morning sessions were given over to general business and medical education, afternoons and evenings were taken up by the 'scientific' work of the sections. Nonetheless, the scientific status of the AMA was not high and meetings were dominated by professional and ethical issues (JAMA 1902; Fishbein 1947, 1092).

The scientific role of the AMA was directly called into question by the rapid proliferation of specialty societies. In 1864 the American Ophthalmological Soci-ety was formed, joining the Association of Superintendents of Asylums, which had been in existence for close to two decades. Superintendents and ophthalmologists were soon joined by many other specialties in organizing societies, which charac-teristically restricted membership to individuals perceived as having contributed to medical knowledge in the specialty. Leaders of the AMA bemoaned the prolifera-tion of these societies but nonetheless continued seeking the support of specialists who increasingly replaced general practitioners as presidents of annual meetings. More significantly, the AMA's system of sections gradually evolved into a paral-lel form of representation for specialists. As specialties grew, sections divided and subdivided. In 1885 there were seven sections, and fifteen years later there were thir-teen. Before 1885, an association-wide committee of nomination chose the officers of the sections, but thereafter sections elected their own officers. In this way, the AMA came to provide an alternative form of representation for specialties that, as the association's representatives never tired of pointing out, was not exclusive and restrictive in membership, as specialist societies were, but was instead open to non-academic specialists and general practitioners (Hibbert 1894, 860). Indeed, many of the papers read in these sections during the latter decades of the nineteenth century seem to have been aimed chiefly at educating GPs in specific skills and teaching them when to consult a specialist.

A brief controversy was ignited by the coming together in 1888 of twelve na-tional specialty societies in an annual Congress of American Physicians and Sur-geons. This followed on the heels of several unpleasant conflicts between the AMA



leadership and the notables of academic medicine, many of whom were specialists. During the early 1880s there was much disagreement about the clause in the AMA's Code of Ethics that prohibited doctors from consulting with homeopaths. Many elite physicians opposed this prohibition on the grounds that scientific expertise rather than professional codes should determine proper practice. A serious dispute broke out when the Medical Society of New York State enacted a code of ethics without a consultation clause; this caused a split in the society, and for the next decades two medical societies coexisted in New York State. Many members of the AMA saw the campaign for freedom of consultation as a self-interested attempt by predominantly urban specialists to increase their fees. In 1885 another dispute erupted over the organization of the International Medical Congress in Philadelphia. The original organizing committee, made up of leading academics and specialists, was dismissed and replaced by a committee more closely identified with the AMA and its support for the Code of Ethics (Warner 1999, 52–69).

In response, those most closely associated with the fight against the Code of Ethics organized in 1886 the Association of American Physicians, an exclusive body representing the scientific elite of medicine (Harvey 1986). Two years later the annual Congress of American Physicians and Surgeons met for the first time. This was a restricted event controlled by extremely restrictive specialty societies that claimed to be devoted to medical knowledge rather than to medical politics or medical ethics. Both the Association and the Congress were perceived as direct attacks on the AMA. One editorial in the Journal of the AMA condemned specialist societies for their "disintegrating influence" that was "antagonistic to any general and harmonious organization of the whole profession"; it went on to attack the new Congress for seeking "to ultimately displace and supersede" the AMA. In contrast to specialist societies, which encouraged "class differences" and their attendant bickering and rivalries, the sections of the AMA were presented as a means of accommodating specialists and researchers while also maintaining unity and homogeneity within the profession (JAMA 1888). But the Congress, which never became more than an annual meeting of the member societies, limited itself to scientific issues. Its members also feared the excessive proliferation of specialties, and its rules stipulated that the admission of any new specialist societies required the unanimous agreement of all member societies. The Congress's existence in fact encouraged efforts to increase the number of specialty sections within the AMA, to improve the way these functioned, to make them more autonomous, and, increasingly, to transform them into the dominant units within the organization (Konold 1962, 37–41).

After 1890, relations between elite specialists and the AMA were not without conflict. The specialty societies and the Congress of American Physicians and Surgeons offered specialist researchers an attractive alternative to the sections of the AMA as well as the opportunity to express hostility to the AMA's attempts to prohibit contacts with irregular practitioners. But by 1896 an editorial in the JAMA proclaimed: "The American Medical Association has become what the Congress of American Physicians and Surgeons sought to be, a veritable confederation of medical bodies devoted to independent lines of thought and practice [...]" (JAMA 1896; Taylor 1896). The specialty sections of the AMA continued into the twentieth century to be characterized as the true associations of specialists precisely because they

were inclusive. The AMA's claim to represent specialists and researchers would continue to have serious consequences as the twentieth century advanced. The radical reform of American medical education in early 20th century was certainly the most visible and successful result of the ability of these two groups to work together and make compromises.

A number of theoretical points emerge from this case study. The first is one that Ben-David made several times in his writings: researchers, even clinical researchers, see the world differently than ordinary medical practitioners and their concerns and interests frequently conflict. The second is that research expertise can be a form of professional power but this power is not absolute because medical practitioners can and do organize themselves to counterbalance the influence of research elites. The third point is that what some view as a matter of scientific expertise may be perceived by others as a matter of ethics or virtue, as the controversy about homeopathic consultations demonstrates. Both medical expertise and medical virtue can be tacit and informal or can be formalized in codes. Codes of ethics formalized medical virtue in the 19th century in much the same way that clinical practice guidelines now formalize recognized scientific competence. In the next two sections we will examine attempts to standardize competence and efforts to codify virtue.

## Case 3: Clinical Research and the Standardization of Competence

One of the ongoing tensions between medical research and medical practice has to do with the movement of the results of the former to the latter. There is now a distinct area of research, Translational Research, devoted to bringing the results of the life sciences to medical practice. More recently there have been calls for (and efforts to implement) "practice-based research" that is more closely attuned to real clinical needs (Westfall et al. 2007). The issue is particularly urgent when it comes to clinical research, where application should be easier; frequently however, this is not the case and the consequence is practice variation from one locale and one practitioner to the next. This was not always a cause for concern. Until the second half of the 20th century, a certain degree of variation in medical practice was considered acceptable or at least unproblematic. But since then a regulatory upheaval (if not revolution) has taken place.

Until the 1970s, medical actions were indirectly regulated through the training and credentials guaranteed by both the organized profession and state authorities. Armed with these credentials, individual physicians were assumed to be competent enough to determine the appropriate medical procedures. As innovations appeared they were debated in the medical literature and individual practitioners adopted them or not. Although the opinions of experts expressed informally or formally provided some guidance for such decisions, they were frequently diffused narrowly and had no formal status. In contrast, the regulation of quality now explicitly targets medical practice itself by attempting to modify physician behavior. Like the regulation of



credentials that it supplements rather than replaces, numerous groups and institutions are involved in this process. Although there is a long history associated with this shift, the transformational developments took place at a specific time (the 1960s and 1970s) and place (in the United States). The outcome of this process has been an international plethora of clinical practice guidelines and a growing literature on how doctors can be convinced or made to follow them. Although guidelines have become associated with the evidence-based medicine movement, they in fact preceded it.

This emergence of a culture of guidelines is not just a consequence of the growing pressure of third-party players to control costs, as suggested by some (Fowkes and Roberts 1984), or defensive measures by medical professions to preserve autonomy, as has been argued by others (Castel 2002; Timmermans and Kolker 2004). Far more complex and long term developments have been at play in the transformation of practice regulation. These emerged well before the current era because outside the traditional private relationship between doctor and patient, large-scale institutional settings for biomedical practice existed beyond the authority of physicians. There, the standardization of classification categories, measures, and procedures was perceived as a requirement for a variety of purposes, including the evaluation of outcomes, large-scale organizational activity, and, later, third-party payment. In the nineteenth century, public health was one such domain. Then, in the early twentieth century, public health standards entered the world of clinical medicine as preventive public health expanded to the sphere of therapeutics through such mechanisms as sexually transmitted disease, tuberculosis, and cancer-control programs. Hospitals, which grew at a prodigious rate at the end of the nineteenth century, also generated demands for standardized organizational structures, practices, and data collection.

After World War II, all aspects of the medical enterprise expanded dramatically, especially in the United States, which was by then the world's richest nation and the most profligate spender on health care. Everywhere but in the United States, national health insurance systems were established or significantly extended. Hospitals were expanded and modernized. The research sector grew significantly as well, especially in the United States, where government funding rose to unprecedented heights (Fox 1996). This expansion of both public domains of medical practice and biomedical research, each with their attendant multiplication of standards and protocols, made the standardization of medical procedures appear both feasible and imperative.

The expansion of biomedical research had a variety of consequences. First, it vastly augmented the already large number of technological and pharmaceutical innovations with which doctors and growing numbers of administrators had to cope, and it amplified the pressure for collective forms of evaluation. Second, many large domains of research became sufficiently collaborative to generate standards and protocols. In particular, the spread of multi-center research required standardized categories and practices that allowed for the aggregation of data. This happened first in several biomedical domains whose interactions among many researchers, complex technologies, clinics, and laboratories necessitated some form of negotiated conventions (Cambrosio et al. 2006). Cancer treatment was a notable case in which research and clinical practice were closely associated. Here, chemotherapy was increasingly the result of research protocols that had become routine practices.

Funding agencies demanding comparability of results forced researchers in other specialties to follow this path as well. Indeed, one of the motivations for the development of the Diagnostic and Statistical Manual of Mental Disorders (DSM) III was to establish psychiatric disease categories stable enough to be the subjects of rigorous and fundable research (Healy 1997). Third, randomized clinical trials (RCTs) gradually became a 'gold standard' for evaluating therapies (Marks 1997). Despite the controversies continuing to surround them, RCTs were widely believed to tell us, in many cases, what best practice was. The logical conclusion for many has been that practices differing from those validated by RCTs are mistaken deviations from correct clinical procedure, and that the perceived solution is to diffuse knowledge of correct practices in various ways, including practice guidelines.

The expansion of biomedical research had yet another consequence: it brought into the open some of the ethical dilemmas long associated with research on humans, and it also created new ones as technology expanded the frontiers of the possible. A substantial minority of the 'guidelines' published during the 1960s and 1970s dealt with issues ordinarily categorized as 'bioethical' concerns, including the standardization of informed consent requirements. The products of medical research created a variety of ethically complex conditions and practices in clinical medicine—such as brain death, life-sustaining technologies, and in vitro fertilization—which seemed to require ethical guidance to supplement their very complex technical guidelines (Rothman 1991). These guidelines then became integral parts of the protocols defining these activities. Today, the very work of ethics is itself becoming subject to special guidelines and evidence-based research.

If the consensus necessary to produce guidelines was made possible by new techniques like randomized clinical trials or the Delphi method developed at the Rand Corporation to generate forecasts from experts, it was made necessary by perhaps the most significant development of these postwar years: the increasing role of governments in every aspect of health care. Through the national health insurance systems that were established during the postwar years in much of the Western world, including the partial system developed in the United States in the mid-1960s, medical practice became integrated into the public political arena and transformed into an object of intense media scrutiny. Public accountability became a critical issue (Wiener 2000). In this context, guidelines produced by experts are attractive for many reasons. All health insurance systems must decide what counts as diseases and medical procedures, which of these are to be paid for, and who should be paid for doing them. This is not an exercise in finding truth. Rather, it requires negotiations in which many actors make claims in the name of various values and rights. What is important in the end is that an act can be placed into one category or another to be dispatched accordingly. Such pigeonholing is frequently performed by administrative fiat or negotiation. But this leaves politicians vulnerable to public criticism. The invocation of expert guidelines to support these decisions helps depoliticize such issues (Jasanoff 1990; Nelkin 1995, 444–456).

An equally important rationale was the perceived need in nearly all Western nations to impose rational direction and coordination on an array of institutions—hospitals, dispensaries, medical schools, local medical assistance or insurance



programs—that had been created incrementally and almost haphazardly over long periods of time and that were increasing in both size and technological-functional complexity. This need was in part, but only in part, linked to budgetary considerations. It also was associated in many European countries with the belief by administrators and politicians that medical professions were too powerful and needed to be brought down a peg or two (Hassenteufel 1997). Less often emphasized but no less critical was the fact that these different kinds of medical institutions were now lumped together in large administrative structures, becoming parts of 'systems' that did not seem to function in any obviously comprehensible way. They appeared to require reorganization based on 'rational' principles and some guarantee of 'quality' (Robelet 2002). Not only did all sorts of practices require standardization, but administrators also required information about health 'systems' in order to exercise organizational control. This information then had to be available in standard quantified form, allowing for understanding and evaluating activities along various axes. In turn, this created health organization research, which received a fraction of the funding for biomedical research (Gray et al. 2003) and deployed quite different forms of disciplinary expertise, including economics and organizational science (Benamouzig 2005). But health services research engendered further efforts to ensure comparability through the standardization of categories, methods of data collection, and practices under study that do not differ in kind from similar efforts in the biomedical research sector.

Clinical guidelines are hardly unique; health care now is inundated with guidelines of every sort. Long-term health planning; the establishment of new institutions or services; specialist training; the evaluation of medications, procedures, and technologies; laboratory testing; utilization management; and ethics review are only some of the activities that have produced an extensive guideline literature. And the list keeps getting longer. What all these activities have in common with cancer treatment protocols or multi-site clinical trials is their technical complexity and need to coordinate large numbers of people and things. In addition to the growing scope and complexity of institutions and activities to be regulated, expectations have changed as well. As health care has become a public good financed by public monies, domains once characterized by individual judgment and idiosyncrasy have become increasingly subject to demands for transparency and regulation (and, it goes without saying, cost control). And every effort to regulate increasingly unwieldy health care systems seems to produce complex mechanisms that require even more guidelines or conventions in order to function.

## Case 4: Standardizing Virtue in the Medical School

The tensions between research and practice have long been internalized in the functioning of institutions of medical education. Such tensions have intensified in the decades since World War II, characterized by massive investments in bio-medical research. Professional rewards of all sorts in medical schools now depend on research productivity and success in obtaining research funds. Revenue from clinical

practice in academic centers is frequently used to supplement biomedical research funding. Sometimes the relationship has been synergistic with targeted research producing clinical innovations that became important money-makers for the faculty and are in turn channeled into further research (Bowman et al. 2007). But in many cases, practice simply finances research. Medical education itself is overshadowed in major medical centers by research priorities (which are also far more attractive to private donors). In the words of Ken Ludmerer (2000), a physician-historian: "By the end of the 1990s, education was by far the most endangered part of the medical school's traditional mission. Amid the pressures of research, graduate medical education, and the provision of increased patient care, the education of medical students has become merely a passing concern." That being said, medical school faculty have usually cared deeply about sending good doctors out into the world and reforms of curriculum and teaching methods have been a regular occurrence. These processes attract only intermittent if any interest from leading academic researchers who leave his task to clinician-educators who receive substantially inferior rewards and status. This has prompted calls for revamping promotion and tenure systems to take account of the different career trajectories of physician-educators (Fleming et al. 2005).

The tension between doing research (and training young researchers) and producing good medical practitioners is only one aspect of an ongoing problem. Another facet has to do with what should be taught. In the early 20th century, it was knowledge of medical science that seemed essential. Of course like all generalizations, his one is too broad and it is easy to find counterexamples; the British medical elite until well into the 20th century valued gentlemanly virtues and practical experience as much if not more than scientific knowledge, as my colleague Chris Lawrence has demonstrated (Lawrance 1985). And just as the narrowness of specialization and scientific reductionism in medicine has engendered diverse efforts to introduce "holism" or "synthesis" or the "biopsychosocial approach", there have been regular reactions in medical schools

> "[...] triggered by still another *prise de conscience* about a too-great emphasis on the biological and technical aspects of medicine at the expense of what have variously and alternatively been called its psychological, social, cultural, interpersonal, behavioral, environmental, ethical, moral, and or humanistic components [...] The most recurrent pattern of all has been to inject designated new courses into the curriculum, as if they were intellectual magic bullets that could remedy the perceived [...] imbalance in medical training. Over the course of the last three decades [...] North American medical schools have moved in seriatim from psychiatry, to psychosomatic medicine, to social and behavioral science, to community medicine, to bioethics, to the humanities in their search for such formulaic solutions" (Fox 1990, 125–157).

Perhaps the most bizarre of these efforts is the one currently agitating medical educators, the "professionalism movement". At one level it can be seen as one of three current movements (the others are the evidenced-based medicine/guidelines movement and the patient protection movement) that seek to improve the quality of medical care. And certainly it is a response to many of the same social, economic and cultural pressures discussed above in Case 3 that have produced these latter two movements. But it is unique in a variety of ways. Unlike evidence-based



medicine that originated in departments of clinical epidemiology and presented itself as a paradigm shift in medical knowledge (or at least that part of it dealing with evaluation of efficacy), professionalism has won broad support among medical educators. Without questioning the cognitive basis of medical education or clinical research, it seeks a renewal in basic medical values or more accurately a return to traditional values; more controversially, it aims to produce not just proper behavior among physicians but virtue.

While professionalism has a much narrower base than the evidence-based medicine, it has nonetheless spawned an impressive literature. As of mid-April 2009, the Web of Science listed 1,084 articles on the subject, the vast majority published after 1999. (There are also a notable number of former deans of medical schools among the authors of these papers. The individual with the largest number of publications on this subject, according to Web of Science, is a former dean of McGill's medical faculty.) Professionalism is a difficult subject to write about, because, while there is a general consensus that medical students and residents need to be educated into internalizing certain kinds of behaviors, values and virtues, there is little agreement about what these actually are or how to go about inculcating them. Probably the most influential statement of the goals of professionalism was the Charter on Medical Professionalism published in 2002 simultaneously in the *Annals of Internal Medicine* and *The Lancet* (American Board of Internal Medicine (ABIM) 2002). It was produced by three internal medicine institutions, two American and one European, which had joined together in 1999 to launch the Medical Professionalism Project.

The charter begins: "Changes in the health care delivery systems in virtually all industrialized countries threaten the very nature and values of medical professionalism [...] We share the view that medicine's commitment to the patient is being challenged by external forces of change within our societies." The response to this threat must be a "renewed sense of professionalism, one that is activist in reforming health care systems". The document thus assumes that medicine has always been governed by a collective commitment to the patient and a sense of professionalism. It then moves on to a brief Preamble:

> "Professionalism is the basis of medicine's contract with society. It demands placing the interests of patients above those of the physician, setting and maintaining standards of competence and integrity, and providing expert advice to society on matters of health. The principles and responsibilities of medical professionalism must be clearly understood by both the profession and society. Essential to this contract is public trust in physicians, which depends on the integrity of both individual physicians and the whole profession."

One finds here the assumption that medicine's (by which is meant physician's) relationship with society is governed by a social contract; this means practically that doctors have both rights and obligations and those rights depend on the fulfillment of obligations so that public trust in physicians can be maintained. Aside from making the welfare of patients primary and visible, the key to this trust is 'integrity', a word that appears twice is this short declaration. The document then goes on to state the three fundamental principles of renewed professionalism:

- *Principle of primacy of patient welfare:* This principle is based on a dedication to serving the interest of the patient. Altruism contributes to the trust that is central to the physician-patient relationship. Market forces, societal pressures, and administrative exigencies must not compromise this principle.

Altruism or dedication to the other is central here. What it means practically is that the physicians' understanding of patients' welfare should trump "market forces, societal pressures, and administrative exigencies".

- *Principle of patient autonomy.*
- *Principle of social justice:* The medical profession must promote justice in the health care system, including the fair distribution of health care resources. Physicians should work actively to eliminate discrimination in health care, whether based on race, gender, socioeconomic status, ethnicity, religion, or any other social category.

The last is perhaps the most 'modern' aspect of this charter extending medical virtue from the individual doctor-patient relationship into the domain of collective social justice. It is the principle that progressive members of the movement are proudest of.

The charter then gives a list of personal responsibilities to be manifested by the physician: commitment to professional competence; commitment to honesty with patients; commitment to a just distribution of finite resources; commitment to scientific knowledge; commitment to professional responsibilities; commitment to maintaining trust by managing conflicts of interest. The last is particularly salient because "medical professionals and their organizations have many opportunities to compromise their professional responsibilities by pursuing private gain or personal advantage. Such compromises are especially threatening in the pursuit of personal or organizational interactions with for-profit industries, including medical equipment manufacturers, insurance companies, and pharmaceutical firms". The charter concludes:

> "To maintain the fidelity of medicine's social contract during this turbulent time, we believe that physicians must reaffirm their active dedication to the principles of professionalism, which entails not only their personal commitment to the welfare of their patients but also collective efforts to improve the health care system for the welfare of society. This Charter on Medical Professionalism is intended to encourage such dedication and to promote an action agenda for the profession of medicine that is universal in scope and purpose."

It is easy to dismiss this document as yet another example of the medical profession's centuries-long struggles to expand or defend its privileges and powers by invoking commitments to competence and the societal good. Certainly, the large literature that has emerged while usually sympathetic to the wider aims of the movement has been clear-eyed about the ambiguity, abstraction and occasional contradictory quality of the values being defended. One particularly lucid but sympathetic participant in these debates refers to this rhetoric as the 'nostalgic' view of professionalism (Hafferty and Levinson 2008). But I want to emphasize a number of other points. First, all this rhetoric has had a real effect on medical education. Most major medical schools have introduced courses or programs that try to implement



the tenets of professionalism, however they are understood. At my own university, McGill, a course component called "Physicianship" tries to teach many aspects of professionalism as described in the charter throughout the entire four years of the medical undergraduate program. (It has also incorporated existing courses, like my own course Medicine and Society, as well as Bioethics taught by department colleagues, which have no relationship to the overall theme but provide an illusion of continuity and coherence.) The second point is that unlike the rest of the curriculum focusing on knowledge and technical skills, these new orientations attempt to foster values in a way that goes well beyond introducing the Hippocratic Oath for graduates as occurred during the interwar years or White Coat ceremonies as occurred more recently. And this brings me to my third and in some ways most interesting point: despite the abstractness of the values being promoted, efforts are being made to train teachers in the field of medical education in order to make it a somewhat less amateur undertaking (Steinert et al. 2006). Similarly, the evaluation of outcomes in teaching has gained ground:

> "Many tools, incorporating quantitative and/or qualitative approaches are now available to assess professionalism; its foundational components of communication and ethics and its central principles of excellence, humanism accountability and altruism. These include standardized clinical encounters, high-fidelity simulations, portfolios, reflection, observations over short-defined periods, critical incidents and longitudinal observations, multisource assessments including peer assessments, written examinations, and measures of conscientious behavior. The selection of a tool should depend upon the purpose of the assessment and the measure's reliability, validity and practicality " (Sullivan and Arnold 2008; Stern 2006).

It should be evident that I, like many others, have serious reservations about 'professionalism' which has always struck me as, at the very least, deeply and astonishingly naïve.[3] (Although sociologists of the medical profession like Elliot Freidson are frequently cited, the critical bite in their work is usually completely missing in the professionalism literature.) But one thing I cannot deny is the good will and idealism of many of those seeking to reform medical teaching. There is genuine will to improve the quality of medical practice. To put it in Ben-Davidian terms, a new societal role may be emerging, that of the (semi)-professional medical educator. And in terms of the subject of this essay, the tension between clinical practice and research, the movement has already had some impact. Certainly it has not radically altered the balance of power within medical schools. As my own, like many others, becomes increasingly subject to corporate models of organization, biomedical research has become even more dominant because of its capacity to attract status and revenue. But there is now a critical mass of clinician-teachers in many faculties who have been made visible and validated by the professionalism movement; these are now capable of serving as role models for medical students. And to the extent that they succeed in creating a new sort of evaluative research of teaching outcomes, there may be emerging yet another potential bridge (as well as a possible source of tension) between clinical practice and research.

[3] In the interests of full disclosure, I confess that I argued energetically against the new course on the ground that it would be perceived as indoctrination by students. I also doubted that 'altruism' could be taught.

## References


American Board of Internal Medicine (ABIM). 2002. Medical professionalism in the new millennium: a physician charter. *Annals of Internal Medicine* 136: 243–246.

Ben-David, J. 1960a. Roles and innovations in medicine. *American Journal of Sociology* 65: 557–568.

Ben-David, J. 1970. The rise and decline of France as a scientific centre. *Minerva* 8: 160–179.

Ben-David, J. 1984/1971. *The scientist's role in society: a comparative analysis*. Chicago: University of Chicago Press.

Ben-David, J. 1991. Socialization and career patters as determinants of productivity of medical researchers. In *Scientific growth: essays on the social organization and ethos of science*, 71–89. Berkeley: University of California Press, Chap. 3.

Benamouzig, D. 2005. *La santé au miroir de l'économie: une histoire de l'économie de la santé en France*. Paris: Presses universitaires de France.

Bowman, M. A., A. H. Rubenstein, and A. S. Levine. 2007. Clinical revenue investment in biomedical research: lessons from two academic medical centers. *The Journal of the American Medical Association* 297: 2521–2524.

Cambrosio, A., P. Keating, T. Schlich, and G. Weisz. 2006. Regulatory objectivity and the generation and management of evidence in medicine. *Social Science and Medicine* 63: 189–199.

Castel, P. 2002. *Normaliser les pratiques, organiser les médecins: la qualité comme stratégie de changement, le cas les Centre de Lutte Contre le Cancer*. Thèse de doctorat de sociologie. Institut d'Etudes Politiques de Paris.

Fishbein, M. 1947. A history of the American Medical Association, 1847 to 1947. In *The scientific sections of the American Medical Association*, 1092f. Philadelphia: W.B. Saunders.

Fleming, V. M., N. Schindler, G. J. Martin, and D. A. DaRosa. 2005. Separate and equitable promotion tracks for clinician-educators. *The Journal of the American Medical Association* 294: 1101–1104.

Foucault, M. 1975/1963. *The birth of the clinic: an archaeology of medical perception*. New York: Vintage.

Fowkes, F., and C. Roberts. 1984. Introducing guidelines into clinical practice. *Effective Health Care* 6: 313–323.

Fox, D. 1996. The political history of health workforce policy. In *The US health workforce: power, politics, and policy*, eds. M. Osterweis, C. J. McLaughlin, H. R. Manasse Jr., and C. L. Hopper, 31–46. Washington: Association of Academic Health Centers.

Fox, R. 1990. Training in caring competence. In *Educating competent and humane physicians*, eds. H. Hendrie, and C. Lloyd, 125–157. Bloomington: Indiana University Press.

Gray, B. H., M. K. Gusmano, and S. Collin. 2003. *AHCPR and the changing politics of health services research. Health affairs*.

Hafferty, F., and D. Levinson. 2008. Moving beyond nostalgia and motives. *Perspectives in Biology and Medicine* 51: 599–615.

Harvey, A. M. 1986. *The association of American physicians, 1886–1986: a century of progress in medical science*. Baltimore: Williams & Wilkins.

Hassenteufel, P. 1997. *Les médecins face à l'état: une comparaison européenne*. Paris: Presses de la Fondation Nationale des Sciences Politiques.

Healy, D. 1997. *The antidepressant era, Cambridge*. Cambridge: Harvard University Press.

Hibbert, J. F. 1894. President's address. *The Journal of the American Medical Association* XXII: 859–864.

JAMA. 1888. The number and variety of medical societies. *The Journal of the American Medical Association* XI: 777–778.

JAMA. 1896. The association of military surgeons of the United States. *The Journal of the American Medical Association*. XXVI: 881–882.

JAMA. 1902. History of the sections of the American Medical Association. *The Journal of the American Medical Association* XXXVIII: 1504–1515.





Jasanoff, S. 1990. *The fifth branch: science advisors as policymakers*. Cambridge: Harvard University Press.

Jewson, N. 1974. Medical knowledge and the patronage system in 18th century England. *Sociology* 8: 369–385.

Jewson, N. 1976. The disappearance of the sick-man from medical cosmology, 1770–1870. *Sociology* 10: 225–244.

Konold, D. E. 1962. *A history of American medical ethics, 1847–1912*. Madison: State Historical Society of Wisconsin.

Lawrance, C. 1985. Incommunicable knowledge: science, technology and clinical art in Britain, 1850–1914. *Journal of Contemporary History* 20: 503–520.

Lederer, S. 1995. *Subjected to science: human experimentation in America before the Second World War*. Baltimore: Johns Hopkins University Press.

Ludmerer, K. 2000. *Time to heal*. London: Oxford University Press.

Marks, H. 1997. *The progress of experiment: science and therapeutic reform in the United States 1900–1990*. Cambridge: Cambridge University Press.

Nelkin, D. 1995. Science controversies: the dynamics of public disputes in the United States. In *Handbook of science and technology studies*, eds. S. Jasanoff, G. Markle, J. Petersen, and T. Pinch, 444–456. Thousand Oaks: Sage.

Robelet, M. 2002. *Les figures de la qualité des soins: rationalisation et normalisation dans une économie de la qualité*. Thèse de doctorat de sociologie, Université Aix-Marseille II.

Rothman, D. 1991. *Strangers at the bedside: a history of how law and bioethics transformed medical decision making*. New York: Basic Books.

Steinert, Y., K. Mann, A. Centeno, D. Dolmans, J. Spencer, M. Gelula, and D. Prideaux. 2006. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME guide No. 8. *Medical Teacher* 28: 497–526.

Stern, D. 2006. *Measuring medical professionalism*. London: Oxford University Press.

Sullivan, C., and L. Arnold. 2008. Assessment and remediation in programs of teaching and professionalism. In *Teaching medical professionalism*, eds. R. Cruess, S. Cruess, and Y. Steinert. Cambridge: Cambridge University Press.

Taylor, L. H. 1896. Work of the Section on Ophthalmology. *The Journal of the American Medical Association* XLVI: 1897–1898.

Timmermans, S., and E. Kolker. 2004. Evidence-based medicine and the reconfiguration of medical knowledge. *Journal of Health and Social Behavior* 45: 177–193.

Waddington, I. 1973. The role of the hospital in the development of modern medicine: a sociological analysis. *Sociology* 7: 211–224.

Warner, J. 1999. The 1880s rebellion against the AMA code of ethics: 'Scientific democracy' and the dissolution of orthodoxy. In *The American medical ethics revolution*, eds. R. Baker et al. Baltimore: Johns Hopkins University Press.

Weisz, G. 1995. *The medical mandarins: the French academy of medicine in the nineteenth and early twentieth centuries*. London: Oxford University Press.

Weisz, G. 2006. *Divide and conquer: a comparative history of medical specialization*. London: Oxford University Press.

Westfall, J. M., J. Mold, and L. Fagnan. 2007. Practice-based research—'Blue highways' on the NIH roadmap. *The Journal of the American Medical Association* 297: 403–406.

Wiener, C. 2000. *The elusive quest: accountability in hospitals*. Berlin: de Gruyter.