

## Divorce between theory and practice: the system of public health training in the United States

Divórcio entre teoria e prática:  
o sistema de treinamento em saúde pública nos Estados Unidos

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**Abstract** *Many analysts have complained about the severe disconnect between public health as it is taught in schools of public health and public health as it is practiced in health departments. At least in the United States, few faculty members teaching in schools of public health have ever worked in public health departments. By the same token, few of those working in public health departments have degrees from schools of public health; most receive on-the-job training. This history traces the roots of this disconnect or “divorce between theory and practice.” It finds that the 1930s were the prime years of community-based public health education, when the pressure of the Depression and the funding newly made available from the federal government by New Deal legislation encouraged practical training programs linked to local communities and health departments. The “divorce” began in the post-war period as an unintended consequence of the system for funding medical education and research at a time of general unpopularity of public health during the McCarthy era. Schools of public health were generally ignored in the 1950s and they began to adapt the strategy that continues today, of using research grants, primarily from the National Institutes of Health, to grow their faculty and facilities.*

**Key words** *Education, Public health, Practice, History, United States*

**Resumo** *Muitos analistas têm criticado a profunda separação entre saúde pública como é ensinada nas escolas de saúde pública e a praticada nos órgãos governamentais. Nos Estados Unidos, muitos membros do corpo docente de escolas de saúde pública jamais trabalharam em órgãos de saúde pública, poucos dos que trabalham em órgãos públicos têm certificados de escolas de saúde pública e a maioria recebe treinamento no local de trabalho. Este artigo busca identificar as raízes desta separação ou “divórcio entre teoria e prática”. Mostra que a década de 1930 foi o principal período da educação em saúde pública voltada à comunidade, quando o peso da Grande Depressão e a verba disponibilizada pelo governo federal através da legislação do New Deal incentivaram programas de treinamento prático vinculados a comunidades locais e órgãos públicos. O “divórcio” teve início no período do pós-guerra como uma consequência não intencional do sistema de alocação de verbas para a educação médica e a pesquisa, em um momento de impopularidade generalizada da saúde pública durante a era McCarthy. As escolas de saúde pública eram, de modo geral, ignoradas na década de 1950 e começaram a adaptar a estratégia ainda vigente de usar verbas federais de pesquisa para ampliar seu corpo docente e instalações.*

**Palavras-chave** *Educação, Saúde pública, Prática, História, Estados Unidos*

<sup>\*</sup>The views expressed in this paper are those of the author and do not necessarily reflect those of the National Library of Medicine or the National Institutes of Health.

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For the past 50 years or more, there has been a chorus of complaints about public health education in the United States<sup>1-3</sup>. The major problem that analysts have repeatedly noted is that there is a severe disconnect between public health as it is taught in schools of public health and public health as it is practiced in public health departments. A visitor from Mars might imagine that schools of public health exist to train men and women for public health practice. But those of us who have spent much of our lives in schools of public health know that this is not true. The faculty members of schools of public health are there, for the most part, to do research and to bring in research dollars. Any educational activities they undertake are a secondary matter. And “practice” or “service” comes in a distant third. Large numbers of faculty members have little or no idea what goes on in health departments.

Within schools of public health in the United States, most faculty members are scientists and researchers with a Ph.D. degree. Few have any work experience outside of academia, much less in city or state health departments. It's hardly surprising that they have little interest in becoming engaged with the practical work of public health agencies. Many, especially in the laboratory-centered disciplines, have little knowledge of, or interest in, politics or policy, or they regard politics as merely some distasteful contaminant of an otherwise orderly search for knowledge. Even social and behavioral scientists are often more interested in their statistical methodologies than with the messy arts of organization, advocacy, and policy-making. Nor are they often to be found in the schools, clinics, churches, and community organizations of the decaying sections of the cities in which they work.

From the point of view of the faculty of public health schools and programs, there is little time for the multiplicity of things they are already being pressured to do. To be required to raise the best part of one's own salary, and to write grants to cover research assistants, secretaries, students, equipment, or other research needs, focuses the mind admirably. All other activities become luxuries. It is only on rare occasion and more

or less by accident that schools of public health harbor public intellectuals or effective public advocates for the public's health.

If schools of public health have become mainly research institutes, where students learn the art of preparing grant proposals and writing scientific articles, what about the local departments of public health? In general, these are staffed by people with little public health training—people who learn the processes and problems of public health on the job. Some have scientific, medical, nursing, or engineering degrees that may be relevant to their work but the matching of credentials to tasks is often haphazard. Certainly, there is no assumption that all members of a local health department will be graduates of an accredited school of public health. Salaries in public health are low and political pressures are often strong; many public health departments survive in a more or less permanent state of crisis, coping with the last budget cut and waiting for the next one. Their contact with the schools of public health is likely to be sporadic - a lecture series here and there, an occasional joint project. In short, there is very little connection between school of public health and public health practice.

How did this divorce between the theory and practice of public health take place? How and why did this state of things come to pass? These are the questions I will try to answer in the rest of this paper.

In the late nineteenth century, when cities and states were calling for public health officers, there were no established career patterns. Public health leaders were generally people like Hermann Biggs - public minded physicians with lucrative private medical practices on the side, who devoted themselves to the public's health as a largely voluntary activity. The rank and file of public health officers was made up of practicing physicians who could be called out in times of crisis to assist in coping with epidemic diseases, but who were otherwise fully involved in caring for their own patients. Or they could be sanitary engineers, responsible for water supplies, sewerage, and street cleaning.

It was the leaders of the Rockefeller philan-

thropies who, in the early twentieth century, set themselves the task of creating a separate profession of public health. In their hookworm eradication campaign in the southern United States, they found that local doctors and part-time health officers did a poor job at eradicating the “germ of laziness”, as hookworm was called<sup>4</sup>. Rural southern physicians disliked the northern Yankees, resented being ordered about, and generally refused to believe that hookworm was a serious problem. Wickliffe Rose, the architect and organizer of the Rockefeller Sanitary Commission, came to believe that a new profession was needed - separate from medicine - composed of men and women who would devote their whole careers to the control of disease. He insisted that there must be two professions: medicine, for treating disease at an individual level, and public health, for controlling disease and promoting health at a population level.

Rose turned to Abraham Flexner who’s “Flexner Report”<sup>5</sup> had been central to the re-organization of American medical education. They called together a group of twenty men: eleven public health representatives and nine Rockefeller trustees and officers for a one-day meeting on October 16, 1914. The decisions made that day would create and shape public health education around much of the world for at least the next thirty-five years<sup>6</sup>.

They decided there should be three classes of public health officers. The “health officials of the first class,” were those with executive authority such as city and state health commissioners. The health officials of the “second class” were the technical experts in specific fields: bacteriologists, statisticians, engineers, chemists, and epidemiologists who would run health department programs and conduct research. The “third class,” of “subordinates” or “actual field workers,” was composed of the local health officials, factory and food inspectors, and public health nurses who would be the “foot soldiers” in the war against disease.

There were, at the time, three competing conceptions of public health: the engineering or environmental approach, the sociopolitical, and the biomedical. Most of the men at the

meeting were themselves physicians and in the end, the biomedical approach won out, with socio-political and environmental concerns relegated to a very subsidiary role.

At the October meeting, Wickliffe Rose laid out a carefully articulated vision of the future of public health education. At the center he placed a scientific school, well endowed for research. This school would belong to a university but be independent - specifically, it would not be a department of a medical school. Students attending the school would be selected from across the country and its graduates would be carefully placed in strategic positions throughout the United States. This central scientific school would be linked to simpler schools of public health to be established in every state; and these state schools would focus on teaching rather than on research. The state schools would be affiliated with state health departments and would offer short training courses for health officers already in the field. Following the pattern of the agricultural extension courses and farm demonstration programs that the Rockefeller Foundation had already used to modernize agriculture in the southern states; they would offer extension services for rural health education<sup>7</sup>. The state schools would teach public education methods and seek to extend public health information to the entire population. The central school would take the whole country as its “field of operations,” sending out “an army of workers” to demonstrate the best methods of public health, and bringing back their practical experience to be “assembled and capitalized” at the center of operations<sup>8</sup>.

At the end of the meeting, Rose and Welch were asked to write up this draft plan and mail it to the participants for their criticisms and suggestions. Rose sent Welch a memorandum entitled “School of Public Health,” and Welch countered - at the last possible minute - with a plan for an “Institute of Hygiene”<sup>9</sup>. Because of Welch’s perhaps unconscious procrastination, there was no time to circulate this document to the meeting participants before its official presentation. Welch had managed to hijack the report and to turn it into a proposal for a

research institute. Welch's version dropped almost all mention of Rose's system of state schools, practical demonstrations, and extension courses. Rose's enthusiastic paragraphs about the need for an army of public health nurses and special inspectors had been eliminated; instead, Welch dwelled happily on the development of "the science of hygiene in all its branches" that would be the focus of the central school of public health. He dropped Rose's phrases about the divergent aims of medicine and public health and instead suggested that the new school of public health should be close to a good teaching hospital.

A number of public health leaders pointedly noted at the time that Welch's focus on research largely ignored public health practice, administration, public health nursing, and health education. The medical side of public health was emphasized to the virtual exclusion of its social and economic context; no mention was made of the political sciences or of the need to plan for social or economic reforms. Clearly, on this plan, public health was to be thoroughly biomedical, not social in orientation. Abraham Flexner, who greatly admired Welch, brushed aside all these objections and subtly maneuvered the decision-making process towards Welch's ideas and the selection of Johns Hopkins University as the site of the first endowed school of public health<sup>6</sup>. The Johns Hopkins School of Hygiene and Public Health opened to its first class of students in 1918.

The first schools of public health: Hopkins, Harvard, Toronto, Columbia, and Yale, tended for the most part to follow the model set by the Hopkins school. They were well-endowed private institutions with high admission standards; they favored medical graduates, and often admitted rather distinguished mid-career people already experienced in public health. In the 1920s and early 1930s, the curricula of the schools tended to be heavily weighted toward the laboratory sciences: bacteriology, parasitology, immunology, and what was called "physiological hygiene," along with instruction in epidemiology, vital statistics, and public health administration. In the 1920s, little was attempted in the way of field

practice but this was, perhaps, relatively unimportant as so many of the students were already experienced practitioners.

The Rockefeller Foundation tried to convince the schools to establish programs of field training. Using the model of medical school education, the students, they argued, should learn to practice in the community much as medical students learned their art in the wards of a hospital. Johns Hopkins under Welch had been reluctant to pay much attention to practical training but in the 1930s, with additional funding from the Rockefeller Foundation, Hopkins did establish the Eastern Health District, consisting of a study population of about 100,000 people living in the neighborhoods around the School of Hygiene. These families were intensively studied through a house-to-house health census every three years; as a local newspaper described the population; "They are, by all odds, the most interrogated, surveyed, investigated and card-indexed citizens of Baltimore—and probably of the forty-eight states, Alaska, Hawaii, Puerto Rico and the Philippines"<sup>10</sup>. Many of the Hopkins doctoral students wrote their dissertations on some aspect of the health of this population.

By 1930, the first schools of health were turning out a small number of graduates with a sophisticated scientific education. The schools however were doing little or nothing to turn out the large numbers of public health officers, nurses, and sanitarians needed across the nation. In 1932, the American Public Health Association established a Committee on Professional Education which prepared reports on the educational qualifications of 15 professional specialists, and ultimately distributed some 250,000 copies of these reports<sup>11</sup>. The idea of this very considerable effort was to inform state and local health departments about the types of employees they should be seeking and the kinds of qualifications appropriate for each, with the idea of creating national standards for the nation.

The major stimulus to the further development of public health education came in response to the Depression, with the New Deal

and the Social Security Act of 1935. The Social Security Act expanded financing of the Public Health Service and provided federal grants to the states to assist them in developing their public health services. Federal and state expenditures for public health doubled during the Depression.

Doctors were now being pushed into public health by the difficulties of maintaining a private practice during the depression. They were being pulled into public health by the expansion of public health positions and the availability of fellowships for training. Overall, the states budgeted for more than 1500 public health trainees, using federal funds, and the existing training programs were soon filled to capacity<sup>12</sup>. As a result of the growing demand for public health credentials, several state universities began new schools or divisions of public health and existing schools of public health expanded their enrollments.

The tremendous push in the late 1930s toward training larger numbers of public health practitioners was also a push toward practical training programs rather than research. Public health departments wanted personnel with one year of public health education: typically, the MPH generalist degree. Ideally, they wanted people who understood practical public health issues rather than scientific researchers. Thus, public health education in the 1930s tended to be practically oriented, with considerable emphasis on fields such as public health administration, health education, public health nursing, vital statistics, venereal disease control, and community health services. In this period, too, many schools developed field training programs in local communities where their students could get a taste of the practical world of public health and a preparation for their roles within local health departments. The thirties were thus the prime years of community-based public health education.

Not surprisingly, the proliferation of short training programs continued throughout the war years. The armed services wanted physicians, nurses, and sanitarians with at least a minimal amount of training in tropical diseases, parasitology, venereal disease control, environmental sanitation, and a

variety of infectious diseases. For the burgeoning industrial production areas at home, industrial hygiene was in demand; for areas with military encampments, sanitary engineering and malaria control were very urgent concerns. In this period, the Center for Controlling Malaria in the War Areas, the forerunner of the Centers for Disease Control and Prevention, was created<sup>13</sup>. Schools of public health adapted to meet the various needs of the armed services and rapid training programs turned out large numbers of health professionals with a smattering of specialized education in high-priority fields. At this time, the research-oriented schools, like Johns Hopkins, admitted mostly Latin American students for doctoral degrees and Hopkins was known as "little Latin America."

In the immediate aftermath of the war, schools of public health were full of returning servicemen and women taking advantage of the G.I. Bill. For a very few years, the country was alight with optimism and energy. In 1944, Thomas Parran, the Surgeon General - and later the first Dean of the Pittsburgh school of public health - had drawn up a grand 10-year plan for his agency, the Public Health Service: ***When peace returns, this country should so reorganize and develop its health resource that there will be available to everyone in the population all health and medical services necessary for the preservation and promotion of health, the prevention of disease, and the treatment of illness... It is believed that the use of public funds is fully justified in developing the physical plant for health, in training professional personnel, in supporting both public and private medical and scientific research of broad public interest, and in reducing the individual financial burden resulting from catastrophic illness or chronic disability.***

***The principle is accepted that no one in the United States should be denied access to health and medical services because of economic status, race, geophysical location, or any other non-health factor or condition. It is a duty of governments - local, State, or Federal - to guarantee healthful living conditions and to enable every person to secure freedom from preventable disease<sup>14</sup>.***

Only part of this grand vision was to be realized. In part because of the hostility and deep pockets of the American Medical Association and their allies, the large insurance companies, neither the comprehensive expansion of the public health service nor the institution of national health insurance would prove politically possible. Thomas Parran himself was soon relieved of his position as Surgeon General and replaced by the more malleable Leonard Scheele. There was no lack of money to spend. In 1946, the Hospital Survey and Construction Act or Hill-Burton program was passed to finance the construction of community hospitals, initially providing \$75 million a year for five years, and eventually pouring \$3.7 billion into new hospital construction. The Hill-Burton program was strongly supported by the American Hospital Association and the American Medical Association; it provided new facilities for medical practice without threatening in any way the method of paying for health services. Indeed, Hill-Burton had a specific provision prohibiting federal involvement in setting hospital policy<sup>15</sup>. The system of Veterans Administration hospitals was also greatly expanded and tied in more closely to local medical schools.

Like hospital construction, medical research had many friends and seemingly no enemies. The war had demonstrated the success of an organized federal effort in financing scientific research, perhaps most notably in the production of huge stocks of the “miracle drug,” penicillin. After the war, responsibility for the wartime projects still underway was transferred to the Public Health Service and the National Institute of Health (which became the National Institutes of Health in 1948). Cancer and heart institutes had been the first, then followed mental health and dental institutes, and then a succession of other institutes targeted toward specific diseases (diabetes, arthritis), body parts (eye, kidney) or stage in the life cycle (child health, aging). The institutes grew, and grew wealthy; they gave away most of their funds to universities and medical schools in the form of research grants. Because the medical schools and the American Medical Association had opposed the direct provision of fed-

eral funds to medical education—nursing an avid suspicion of any form of governmental intervention or control—the NIH research grants proved a politically acceptable way of funneling money to the medical schools. In the post-war period, the budget of the National Institutes of Health grew dramatically: from \$180,000 in 1945, to \$4 million in 1947, to \$46.3 million in 1950, to \$81 million in 1955, to \$400 million in 1960. Liberals, conservatives, medical school deans, and researchers were all happy with the system, and members of Congress were pleased to bankroll such a popular and uncontroversial program<sup>16,17</sup>.

Schools of public health would have had no objection whatsoever to direct federal funding. But public health schools were generally lumped in with medical schools when it came to setting federal policy, so they had to compete with medical schools for research grants - in a grant system dominated by medical school professors. Adding to the woes of schools of public health was the period of deepening conservatism from about 1948 through the late fifties. In the Cold War atmosphere, McCarthyism associated any advocacy of public health agendas or national health insurance with “socialized medicine” and identified this in turn with socialism or Communism. When Thomas Parran, who had been ousted as Surgeon General, took over as Dean of the new Pittsburgh School of Public Health, he was attacked as a “Communist,” who favored socialized medicine and compulsory health insurance<sup>18</sup>. (The Mellon Trustees who had financed the school had to pour over Parran’s speeches and publications to make sure that the charges were unfounded.) In the late 1940s and early 1950s, many of the most articulate and outspoken public health leaders were under attack, silenced, or were losing their positions and their influence.

Public health, which had thrived during the depression, the war, and the immediate postwar period, was becoming unpopular. What were the schools of public health like in 1950?

A survey of the public health schools in 1950 found them overcrowded and underfunded, lacking key faculty members, lacking classroom and laboratory space, and lacking

necessary equipment<sup>19</sup>. All were suffering from high levels of financial stress. The requirements for accreditation were not strenuous: a school had to have at least 8 full-time professors, and they averaged 16. The most frequently listed field of the faculty members was public health practice. Perhaps the most interesting part of the accreditation of schools of public health was the evaluation of practical training and fieldwork<sup>20</sup>. Schools had to be located close to local public health services that could be used for "observation and criticism" and these public health services had to be of sufficiently high quality "to make such observation fruitful." Indeed, all the accredited schools reported some sort of functional association with county or city health departments. The Columbia school, for example, shared a building with one of New York City's District Health Centers. Johns Hopkins had the Eastern Health District, which was jointly operated by the City Health Department and the school. The recently formed school at Pittsburgh worked with the Pittsburgh Health Department in organizing the work of the Arsenal Health Center, along the lines of the Eastern Health District of Baltimore. The overall impression of the accredited schools of public health in 1950 was that they were doing a good job of preparing public health practitioners through courses and fieldwork and that the numbers of faculty and students were growing. The main complaints of the schools were lack of funding to hire new faculty, expand space, and purchase equipment.

Had a relatively small federal program been available to fund schools of public health, the future of public health education might have been quite different. But in the conservative era of the early 1950s, there was growing suspicion of government programs, and seething hostility to even such cost-effective public health measures as the fluoridation of water supplies. It is hardly surprising that the needs of the schools of public health were ignored.

By the same token, it is hardly surprising that the schools of public health all settled on essentially the same survival strategy, which they pursued with greater or lesser enthusiasm,

and with greater or lesser reluctance, depending on the orientation and interests of their faculty and deans. They would apply for research grants and use the research funds to pay the salaries of additional faculty members, on the grounds that new faculty could spend some of their time teaching and some of their time on funded research. In 1950, on an average across schools of public health, faculty spent 40% time on teaching, 40% on research, 10% on administration and 10% on service. Averages, however, are misleading because they mask the wide variation between schools of public health and even between different departments within a particular school. What happened was that, if the faculty of a particular department was devoted mainly to teaching or to "service" (public health practice), the numbers of faculty stayed stable or gradually declined. If the department was devoted to research, and was reasonably successful at funding that research, the department grew, added more people, consumed more space and equipment, published a steady stream of research papers and reports, and generally gave the impression of being a dynamic and productive place. Size beget size, growth beget growth, and research success bred research success. Over time, the results could be dramatic, with some schools and departments growing at an impressive rate and others appearing moribund<sup>21</sup>. A few schools, especially Hopkins and Harvard, grew large and prosperous. Between them, Hopkins and Harvard had 40% of all faculty involved in research, trained most of the faculty for smaller schools, and generally dominated the field. Smaller or less prosperous schools did their best to emulate the research ideal, to garner their own grant funds, and to grow their own faculty.

The available funding—and the faculty members who were suited by education, experience, and personality to succeed in the research system, now shaped the institutions and drove their priorities. At Hopkins, happily devoted to the research ideal, graduate students who helped the professor with his research were of more interest than MPH students, who merely absorbed rather than produced research results. The laboratory scientists favored

doctoral students who would be around for several years, doing research for their dissertations and serving as laboratory assistants<sup>22</sup>. The system of research funding worked well for the laboratory sciences, and to a certain extent for epidemiology and biostatistics, but did not work well for field research, public health practice, public health administration, the social sciences, history, politics, ethics, or law. So within the schools of public health in the 1950s, public health practice and other non-quantitative disciplines suffered. The community-based orientation of the 1930s had disappeared and the field training programs all essentially collapsed.

As the faculty gradually withdrew into their research, they further distanced themselves from the problems of local health departments. And the health departments were in a sorry state. In the 1950s, federal grants-in-aid to the states for public health programs steadily declined with the total dollar amounts falling from \$45 million in 1950 to \$33 million in 1959<sup>23</sup>. Given inflation, this represented a dramatic decline in purchasing power. Public health departments were caught in a downward spiral. Lacking funds, they couldn't bring in new people or begin new programs; lack of new people and programs gave them an aura of failure and irrelevance. Health departments were seen to run under-funded programs with underqualified people who answered to unresponsive bureaucrats.

Between 1947 and 1957, the numbers of students being trained in schools of public health fell by half. Alarmed, Ernest Stebbins of Johns Hopkins and Hugh Leavell of Harvard, representing the Association of Schools of Public Health, walked the halls of the United States Congress to urge its members to support public health education<sup>24</sup>. They found an especially sympathetic audience in Senator Lister Hill and Representative George M. Rhodes, and in 1958, Congress enacted a two-year emergency program authorizing \$1 million a year in federal grants to be divided among the accredited schools of public health.

The Hill-Rhodes bill then authorized \$1 million annually in formula grants for accredited schools of public health and \$2

million annually for project training grants; between 1957 and 1963 the United States Congress would appropriate \$15 million to support public health trainees. The worst of the crisis seemed to be over. In the 1960s, Lister Hill in the Senate and John E. Fogarty in the House became supporters of public health education. The Congress raised the ceiling on the formula grants, provided grants-in-aid for training to state health departments, and authorized special training grants, fellowships for faculty development, and construction grants for schools of public health.

This was an exciting time for the schools; between 1960 and 1964, the total number of applicants to schools of public health more than doubled; the number of faculty members increased by 50 percent; the average space occupied increased by 50 percent; and the average income of the schools more than doubled<sup>25</sup>. The newly created Agency for International Development (AID) encouraged schools of public health to develop international health training programs whose students would become "ambassadors of American science" abroad. By 1965, the whole country seemed to have become concerned about the "population explosion," and students flocked to new departments of population dynamics. The passage of Medicaid and Medicare legislation led to a large demand for medical care administrators. In 1966, a Special Study Commission of the Association of Schools of Public Health estimated that there were over 6000 new positions in medical care administration requiring graduate level educational preparation<sup>26</sup>. The environmental movement energized by Rachel Carson's *Silent Springs* spurred the creation of the Environmental Protection Agency and passage of the Clean Air Act; labor mobilization prompted the creation of the Occupational Health and Safety Administration and the National Institute of Occupational Safety and Health<sup>27</sup>. All these agencies created a lively demand for professionals trained in public health programs.

Much of this activity, though related to public health, by-passed the state and local health departments, which became ever more irrelevant to the schools of public health. The



schools grew in number and size, and now provided trained personnel for a many different state, national, and international agencies. Graduate programs in university departments and in schools of engineering, medical schools, schools of business administration, schools of nursing, schools of social work, and schools of education and communication started to offer degrees in such fields as environmental health, health management and administration, nutrition, public health nursing, and health education. In addition, the numbers of junior and community colleges offering allied health programs grew dramatically. Public health education had become a growth industry with no apparent end in sight. But were schools of public health still needed?

Evidently, President Richard Nixon thought not, for in 1973, he recommended terminating federal support for schools of public health and the discontinuation of all research training grants, direct traineeships, and fellowships. This sent shockwaves through a system that had grown dependent on a steady flow of federal funding for its basic support. The strain of the funding cutback threats is reflected in the papers from a Macy Foundation-funded Conference held at the Rockefeller Foundation's Study and Conference Center in Bellagio, Italy, in 1974. In the volume published from that conference, Cecil Sheps, then vice chancellor of the University of North Carolina, noted that leading schools of public health were wondering "seriously and agonizingly" about their future<sup>1</sup>. The participants offered a generally gloomy assessment of the state of public health education. John C. Hume, then dean of the Johns Hopkins School of Public Health, spoke about the changes that he had experienced over 20 years as a consequence of the patterns of federal support for biomedical research. The once cohesive nature of the school had been lost, he said: there was little shared conversation, and no coherent teaching program. The autonomy and independence of departments and faculty did encourage initiative but also resulted in isolation and fragmentation. Instead of a unified school of public health, the departments constituted "a series of mini-

schools with limited interests."<sup>28</sup> Hume noted that his major problem as Dean was to cope with the fiscal tides - the waxing and waning of federal enthusiasm for particular topics. In the 1960s, for example, population studies had been elevated in importance with the influx of new funding, but by the end of the decade, this interest had largely evaporated.

The one student representative at the conference, identified as recent graduate Frank C. Ramsey, stated the students' distress with an educational system focused on soft money:

***The financing of the school I attended is such that the departmental heads and faculty members are mainly responsible for raising money. Most of the funds come from federal sources and virtually all of them go into research. The heads of departments with popular programs find it easier to raise funds than is the case with heads of departments with less research-oriented programs. The grant system influences the school's organization, function, and orientation [...] [it] places constraints on the type of professionals employed and the work performed [...] [among the students] there was a fairly general belief that solutions to societal problems were being sacrificed on the altar of scientific research***<sup>29</sup>.

Some of the threatened funding cuts were eventually restored, but the trend in public health schools in the 1970s and 1980s was toward ever more reliance on targeted research funding, thus exacerbating the problems to which Ramsey had referred. In 1976, the Milbank Fund issued an extensive report, ***Higher Education for Public Health***, which asked, rather sharply, whether schools of public health had become so dependant on federal funds that "their policies and programs are determined by dollars available and they no longer control their own destiny?"<sup>30</sup>. The Report offered faint praise for the system of research driven by changing federal funding priorities: "This is not always bad, as it sometimes results in research that is realistically related to the needs and interests of the nation." By implication, schools would do better if their faculty could design their own research within a broad framework established by the needs of public health in practice.

Twelve years later, the Institute of Medicine's landmark report, *The Future of Public Health*, urged schools of public health to offer educational programs more targeted to the needs of practitioners and to establish firm practice links with state and local health departments so that faculty members could undertake professional responsibilities in those agencies, conduct relevant research, and train students in practice situations<sup>31</sup>. It suggested that schools of public health provide short training courses and continuing education opportunities for public health practitioners to upgrade the skills of "that substantial majority of public health professionals who have not received appropriate formal training." At the same time, it documented the bleak landscape of many public health departments across the country: *The most frequent perception of the health department by legislators and citizens was of a slow and inflexible bureaucracy battling with chaos, fighting to meet crises, and behaving in an essentially reactive manner [...] Just getting through the day is the only real objective of the senior administrator.*

In the years since the Institute of Medicine's report, the public health educational system has continued to expand at an accelerated pace. Many of the nation's accredited

medical schools now have operational MPH programs or are developing graduate public health degree programs. More and more colleges and universities are establishing MPH programs. A number are involved in distance learning programs that offer the possibility at last of fulfilling the long-recognized need to bring public health education to the homes and offices of the public health workforce.

Much of the impetus to training for public health practice has come from the threat of bioterrorism. In the past few years, the funding has again flowed for "public health preparedness." It is my view that this influx of funding, however welcome to health departments and universities, also poses a threat of distracting us from the main work of public health. Response plans designed for rare emergencies such as bird flu or bioterrorism must also work effectively in more commonly occurring problems such as floods and infectious disease outbreaks. That is certainly the challenge of our age in public health. As the Hurricane Katrina has showed us all, the billions of dollars flowing into homeland security have so far proved next to useless in the face of a naturally occurring disaster. Let us hope that our public health institutions can do better.

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