ventory (MMPI), a theme explored repetitively in clinical psychology. Equally, physicians might recognize that the artistic, intuitive view of judgment is yielding to increasingly sophisticated modes of analysis and that a variety of models or representations of judgment are available and may have practical utility as well as theoretical interest.

Psychological research on judgment has generally involved quantification and statistical modeling to a degree that has had relatively little appeal for most clinicians. But simplification of reality and quantification are characteristic of all experimental research and they have not prevented fruitful exchange between biomedical researchers and clinicians. The difficulty of developing quantitative data needed for a sound decision analysis of a particular problem does not imply that such analysis is in principle unsuited to the problem, for subjective probabilities may be used in formal analyses as well as in intuitive judging. Indeed, a self-fulfilling prophecy may be at work here, for the more it is insisted that a clinical situation cannot be analyzed in terms of risks and likelihoods, estimated however roughly, the more investigation in these terms is discouraged.

There may be yet another problem underlying the paucity of interdisciplinary effort. Physicians, as well as their patients, prize their good judgment highly. Contemporary cognitive psychology, on the other hand, has been vigorously exploring the limitations and biases of human judgmental capacities. The applicability of these results to medical decision-making might be considered seriously by physicians. Psychologists, in turn, might recall that the results of laboratory research using unfamiliar tasks do not necessarily generalize to problem-solving in a domain where prior experience and practice play a large role. Experienced, competent practitioners of an art may well know more than formal theories encompass.

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NEWS AND COMMENT

Health Manpower Act: Aid but Not Comfort for Medical Schools

The Health Professions Educational Assistance Act of 1976, which grandly proclaims that doctors are a "national resource," is the most far-reaching and complex health manpower bill to pass the Congress since 1963, when the government first went into the business of direct support of medical education. The act—a monumental piece of social legislation designed to cure the ills of the rural and inner city poor by putting a doctor in their midst—defines a new set of relationships between the government and the nation's medical schools in which the government says, in effect, we are paying your bills so we should have a hand in running your school.

By and large, the medical schools, having long since realized that they cannot exist without federal support, are taking it all quite calmly, though underneath they hate the idea of giving the feds what amounts to a seat on the board. But one surprise provision of the new bill, written as a last-minute political compromise by Senate and House staffers, is regarded by some schools as so galling an intrusion into academic affairs that they are considering turning down some types of federal support as a matter of principle. The law requires that medical schools taking money under the health manpower bill accept a certain number of American students studying at foreign medical schools into their third year classes. Yale president Kingman Brewster is among those ready to say "thanks but no thanks" before agreeing to what he calls "an outrageous federal intrusion upon academic self-determination."

The federal government's involvement in medical education has come gradually, beginning indirectly about 20 to 25 years ago with support of research. But recently, the government has been supporting medical education more directly.

It was around 1963 that manpower experts first foresaw a disastrous shortage of doctors in the United States, and the government began aiding medical schools by paying for construction and offering scholarships. Then, as talk of a doctor shortage grew into projections that we would be 50,000 doctors short by 1980, pressures for federal action grew commensurately, and the government decided to pay part of the cost of medical school tuition directly on a per head or "capitation" basis. This idea first took form in the 1971 health manpower bill, which tied capitation to increased enrollments, with the government offering medical schools an inducement to produce more doctors. Only those schools willing to expand their classes would be eligible for capitation grants in the neighborhood of $1500 per student.

Having bought the notion of a doctor shortage, Congress also bowed to the philosophy that in a free market economy the traditional laws of supply and demand would operate, so that the "extra" doctors the medical schools were turning out would end up filling vacancies in inner cities and rural areas.

It is by now of course quite clear that the concept of supply and demand does not apply here. There are more doctors—in major East and West Coast cities, practicing in high-paying specialty fields; the underserved are just as underserved as ever. And, these days one does not worry about a doctor shortage, but about a possible doctor surplus. The 1976 manpower bill confidently declares that there is no longer a doctor shortage. (It should be noted that health manpower forecasting is a very perilous endeavor and that no one really knows whether we have, or will have, an optimum number of doctors.)

Concern about shortages has been replaced by concern about "geographic and specialty maldistribution," the two problems the new bill is designed to correct (*Science*, 25 April 1975 and 6 February 1976). Negotiations over the new bill, which President Gerald Ford somewhat reluctantly signed on 13 October, took three very long years, during which the House, the Senate, and the Administration fought hard to have their different philosophical beliefs reflected in the final legislation. The seemingly endless course of negotiations came as something of a surprise. In early summer of 1974, for example, LeRoy Goldman, aide to Senator Edward M. Kennedy (D–Mass.), told a reporter:

"Senator Kennedy will bring his bill up in the subcommittee and one or two

Principal Health Manpower Provisions

The provisions of the Health Professions Educational Assistance Act of 1976 cover students in a range of professional schools, including medicine, dentistry, osteopathy, pharmacy, optometry, podiatry, veterinary medicine, and, for the first time, schools of public health. Among its principal provisions are these:

- *Capitation*. Funds are authorized at $2000, $2050, and $2100 per medical student for fiscal years 1978–1980. Capitation amounts for students in other schools are somewhat lower.
- *Primary Care Residences*. In order to qualify for capitation money, all the nation's medical schools combined must coordinate their first year residency positions so that a certain percentage of places are in primary care specialties: 35 percent in FY78, 40 percent in FY79, and 50 percent in FY80. If the schools in the aggregate cannot achieve this distribution, then each school individually will have to provide the allotted percentage of residency positions in primary care.
- *Americans Studying Abroad*. A second capitation condition requires schools to accept a certain number of American students who have completed two years of medical school abroad.
- *Foreign Medical Graduates*. The law provides for a significant decline in the numbers of FMG's practicing in this country. A prime motive behind changes in immigration laws to make it difficult for FMG's to enter this country, and even more difficult for them to stay more than a couple of years, was the feeling that these foreign-educated physicians provide a lower quality of care than do M.D.'s from U.S. schools.
- *National Health Service Corps*. The health service corps scholarship program is designed to place M.D.'s in "manpower shortage areas" for a period of at least two years, usually four, in exchange for scholarship aid. Payback provisions for those who would like to buy their way out of service are severe—three times the amount of aid received, plus interest, payable within one year of failure to serve.
- *National Research Service Award Program*. Of particular interest to basic researchers is a provision of the bill that excuses from service in a manpower shortage area those scholarship holders who show exceptional promise in research. This provision, engineered virtually single-handedly by David Challoner, dean of the St. Louis University Medical School, allows young investigators to pay their obligation by participating in the Research Service Award Program. No specified number of awards are set in the bill, but Hill staffers say it is meant to be small—perhaps in the neighborhood of 400 to 500 individuals was one guess. It is not meant to be a loophole for those who want to avoid service but is, as Challoner says, intended to make sure that the best new researchers are not lost to biomedical science just because before even entering medical school they made a decision to accept scholarship support.
- *The Trigger*. In order to assure that large sums of money are available for the service corps scholarship program, as well as a straight, no service scholarship fund for the disadvantaged, Congress has devised an elaborate scheme tying scholarship and capitation funds together. The so-called scholarship "trigger" comes into effect only if the Administration obligates (actually intends to spend) 75 percent of the money Congress has authorized for capitation under the law. If that happens, the Administration must also spend a sizable sum, according to a formula in the law, on scholarships. For instance, the capitation authorization for FY78 is $178.7 million. If the Administration plans to spend three-fourths of that amount, it must either fund the scholarship programs at the full authorization level of $75 million or put 50 percent of what it does spend in scholarships, whichever is the lesser. It takes a mathematical genius to figure the stipulations out—even Hill staffers who drafted the provision have trouble explaining it—but if the plan to solve geographic maldistribution is to work, it is essential that large sums of money be available for scholarships. That part of it is quite simple.—B.J.C.

of the minority members will say, 'It goes too far,' or 'We haven't had enough hearings,' and then the senator will say, 'I believe it's in the national interest—now let's vote on it' and it'll pass the subcommittee." Goldman also predicted the Kennedy bill's easy passage in the full Senate, as well as its acceptance by the House and White House.* But things did not turn out that way.

The final bill, as one Hill staffer put it, emerged from a process that was at once "rational and irrational, cordial and bitter." Throughout it all, the medical schools lobbied to get as much money for as little in federal oversight as possible and sometimes talked as if the sky were falling. From their point of view, it did a little.

Medical World News, 19 July 1974.

Geographic Maldistribution

In the House, Representative Paul G. Rogers (D–Fla.), chairman of the health subcommittee, wanted to go after the maldistribution problems by establishing various voluntary inducements to get schools to train more primary care physicians and to get those physicians to work in underserved areas. For example, Rogers favored a major expansion of the National Health Service Corps, a scholarship program in which recipients are expected to serve a year for every year of aid. Rogers reasoned that, with the cost of medical education rising as sharply as it is, the service corps would have wide appeal, certainly sufficient to meet the goal of geographic distribution without having to virtually draft doctors into service.

On the other side of Capitol Hill, Senator Kennedy, chairman of the health subcommittee, could not have disagreed more. Kennedy figured that, since every medical graduate is taking some federal money through the capitation funds that are paid to the schools, every graduate should serve. Kennedy wanted to tie capitation money to mandatory service for all.

But Kennedy's mandatory service provision could not get past the Senate. Senator J. Glenn Beall (R–Md.), true to aide Goldman's prediction, felt it "went too far," and successfully got the Senate to accept a compromise proposal in which schools would set aside a certain percentage of places for students who would agree to take health service corps scholarships. Rogers did not like the idea one bit, saying it would create a track system within medical schools.

Specialty Maldistribution

The Senate also wanted to attack the specialty maldistribution issue by what became known as the "percentage set aside" method, with schools having to agree to set aside a certain number of residency positions in primary care—family medicine or pediatrics, for instance—as a condition of capitation. In addition, Kennedy wanted to establish a federal residency control board to tell schools what those numbers should be. Again, Rogers took exception to the Kennedy approach. He wanted a provision requiring schools to give each student "remote site training" in a rural area or other nonhospital setting as part of undergraduate education. Here, as with

New Quarterly from the Smithsonian

The Smithsonian Institution has come out with the first issue of a new quarterly periodical that its creators believe fills a void in the realm of publications aimed at the scholarly and public affairs–minded layperson.

Described as "a national review of ideas and information," the *Wilson Quarterly*, put out by the Smithsonian's Woodrow Wilson International Center for Scholars, is a sort of a thinking man's *Reader's Digest*. It contains articles, summaries of articles that have appeared in other periodicals, and book reviews on topics ranging across government, foreign affairs, economics, science, the arts, and the press.

The editor of the new quarterly is Peter Braestrup, former newspaper and magazine reporter and also a former Wilson fellow. Braestrup explains that the center, since it began in 1970 (*Science*, 5 Jan. 1973), has had in mind the development of some sort of publication to fill its mandate, which includes the communication as well as the support of scholarly work. The publication was originally planned as a display case for work conducted at the center, but it was decided that there are already enough periodicals around that print selections of scholarly work from a variety of disciplines.

So, in April of 1975, the board agreed on the present format—a digest designed for "laymen." Braestrup said that after surveying the field, they found the closest publication to what they had in mind was the more "flossy and glossy" *Intellectual Digest*, which is now defunct.

Funds to launch the new endeavor, amounting to about $225,000, have been collected from a multitude of private foundations, corporations, and individuals, notably the Richard King Mellon Foundation.

The crucial factor in getting things going, says Braestrup, has been the cooperation of the *Smithsonian* magazine, which is handling all the circulation, promotion, and noneditorial functions. A subscription costs $12 a year, and out of a direct mail campaign to 1.3 million people, 70,000 subscribers have been obtained. The ultimate circulation is expected to be about 90,000.

The quarterly will contain contributions from Woodrow Wilson fellows as well as outsiders. An unusual feature is a series of tightly written summaries of articles from a selection of more than 400 periodicals—grouped in nine categories. There are 47 of them in the first issue, each running about half a page, which reflect a staggering amount of thumbing and thinking by the editorial staff, the fellows, and freelance writers.

There follow two articles apiece on Brazil and on the American Revolution, lists of "background books" for readers who want to pursue these topics, and many tiny book reviews of titles thought to be worthy but that tend to go unreviewed in the popular press.

For dessert, the first issue serves up a reprint of the famous article by Russell Lynes, "Highbrow, lowbrow, middlebrow," that was first printed in *Harper's* in 1949. The humorous essay was based on Lynes' perception that the old class structure was falling apart and there was a new one based on taste and "high thinking." Lynes' observations are as apt now as when they were written—and their republication in the quarterly may be taken, perhaps, as an indication that the high thinkers participating in the new enterprise are not going to be allowed to fall into the familiar scholars' trap of taking themselves too seriously.—C.H.

geographic maldistribution, Rogers sought a "voluntary" approach, assuming that a certain number of students would choose a primary care speciality on their own if they were exposed to something other than academic medicine early on.

There were two other points of contention between the House and Senate approaches to the health manpower bill when they went to conference in August. The House-passed bill, reflecting Rogers' belief that with National Health Insurance looming on the horizon there is still a need for more doctors, contained a provision tying capitation money to further increasing class size, in the first or third year. And the Senate bill contained a measure that would cut dramatically the number of foreign medical graduates (FMG's) in this country, who now comprise a significant portion of the total number of physicians practicing in the United States. Neither side liked the other's provisions.

It was late in July before the Senate finally managed to pass a manpower bill, and then it took several weeks for a House-Senate conference. During this time, medical school administrators were going crazy with fear that no bill would be passed before Congress adjourned for the elections and the capitation funds on which they have come to rely might not be forthcoming. Deans, and even university presidents, by the dozens came to town to lobby for or against this or that provision in somebody's bill.

The conference, when it did come, was a difficult and, sometimes, acrimonious one, according to those who were present. After three years of fighting, participants were not only exhausted but also deeply entrenched. The conference took several days, and nights, of intense negotiations and, toward the end, just before Labor Day, the slogan on the Hill became, "fix it [the bill] by Monday," as staffers strained to get a bill that could pass the Congress and meet with White House approval in time for action this year. To accomplish this, they even managed to get their congressmen to agree to "let the staff do it." And, "fix it" they did.

The Trade-offs

What happened was this. The Kennedy people gave up their "percentage set aside" policy, as far as geographic maldistribution and the health service corps are concerned, and accepted Rogers' position on a voluntary corps. But they felt they won their point, nevertheless, by getting the Rogers people to accept what has been dubbed the "trigger." Its purpose is to guarantee that the scholarship corps is not gutted by a lack of funds. It establishes an elaborate mechanism which says that the government cannot actually spend *any* money on capitation, under certain conditions, unless it spends a specified proportion of what Congress authorizes for the service corps scholarships (for a further explanation of the trigger, see box, p. 701).

When it came to specialty maldistribution, the Kennedy side won the fight to retain the requirement that by 1980 schools set aside half of all their residency positions for primary care but yielded to Rogers by agreeing to a voluntary, private residency review group rather than a federal residency control board.

The Rogers people lost their fight for "remote site training" and the provision for tying capitation to continuing increased first-year enrollments. The Kennedy people won resoundingly on the question of foreign medical school graduates to the extent that the bill, as signed, contains an amendment to the immigration laws saying that doctors are no longer to be given special consideration among the immigrant pool.

On the whole, those who were close to the negotiations agree, it looked as if the Senate were coming out ahead, a position that one participant pointed out is politically unacceptable. "How would it look," he asked, "if there were an article in *Science*, and elsewhere, saying that Kennedy won and Rogers lost?" That, according to the consensus, is where the threatening provision about U.S. medical schools accepting American students studying abroad came in.

The fact that each year, large numbers of Americans go abroad to medical school because they have been denied a place here has become a serious issue, particularly because, when they come home to practice, they are not, by and large, as well educated as their counterparts who did get into a U.S. school. The Rogers side proposed, late in the game, that U.S. schools be required to take, in the third year, any American medical student enrolled abroad who can pass part I of the national medical boards—the exam that is supposed to prove you know something about basic biology. The Secretary of Health, Education, and Welfare (HEW) would apportion slots for these students equally among the schools, which are forbidden from taking into account anything in a prospective student's academic record except the fact that he passed part I.

If you accept the idea that the provision applies only to students currently enrolled abroad, a rough calculation shows that no school, between now and 1980, would have to take more than a dozen students, if that. To the Senate staffers, and later to their senators, it seemed like an innocuous compromise, one that served a political purpose without costing anyone too much. So, they bought it. And so it was done. The health manpower bill passed the Congress and went to the White House.

A Manifest Perversity

By then, the medical community knew what had happened, and the lobbyists turned to a new target. Yale president Brewster telegrammed the President urging him to veto the bill (never mind that it had taken three years to write and in other ways represented an acceptable compromise between academia and state). Brewster even went out of his way to make a public speech on the subject. On the occasion of the dedication of a cancer center at Yale, he said the law makes the HEW secretary the admissions officer of every medical school, and he won't have it. "I submit that the perversity of this legislation is manifest and its constitutionality is very dubious," he declared. "It seeks to force American medical schools to admit persons who would not have been admitted on their own." He went on to say, "I bring this wretched business up here . . . because each one of us who cares about the quality of research and scholarship, education and training, as well as clinical care has a stake in this matter." Yale is seriously considering refusing capitation money—its entitlement is about ¾ million dollars a year—rather than be bound by a provision which is regarded as a violent infringement of academic freedom.

Because Yale also strongly opposed Kennedy's "mandatory service" provision, it had already thought about not taking capitation. In fact, the subject had been discussed favorably with members of the Yale Corporation, so, one might say, Yale was already psyched up to turn down capitation when this latest provision came along. At St. Louis University Medical School, dean David Challoner is also considering turning down capitation money rather than give in, but he does not yet know whether his trustees will agree, or whether his school can afford to be so principled. (For a time, at least, Yale can, which may be one reason that it could lead a fight

World Population Trends

The United Nations predicts that the world population will more than double, from the present 4 billion to somewhere between 10 and 16 billion before finally leveling off. But Lester Brown, director of Worldwatch Institute, says in a new report that it's going to level off a lot sooner because the earth's food support systems cannot take the strain and starvation will cause a rise in death rates if governments don't move swiftly on the family planning front.

In the report, "World population trends: Signs of hope, signs of stress," Brown says that the global population growth rate peaked in the early 1970's and is now subsiding. The total population increased by 69 million in 1970, but is now increasing only by 64 million a year. Brown says sooner or later governments are going to come to realize that "the only real choice governments have before them is not whether population growth will slow, but how."

The way it's being done now in many countries is through deterioration of food-producing systems—overfishing, overgrazing, land erosion, and deforestation. The worldwide fish catch peaked at 70 million tons in 1970 and has declined since then because of depleted stocks. This decade has shown us, writes Brown, that "land-based food systems can also give way under intense pressure." Although such deterioration is brought into focus by a catastrophic drought or flood, "The newsworthiness of triggering events often obscures the fact that in some of the poorer, more densely populated countries local food production capacity is quietly deteriorating and in some cases being irreversibly destroyed." One of the most devastating examples of this process was the prolonged drought in the Sahel where nomadic people "capable of eking out an existence in the harshest of environments" have been driven, perhaps permanently, from their lands and have become "ecological refugees."

Whereas in the 1950's and 1960's rich nations could come to the aid of a country suffering from a bad crop year, surplus food stocks have shrunk to perilously low levels, and bad years will mean increasingly frequent and widespread famines. The 1970's, Brown writes, are already seeing a "reversal of the gradual improvement in food consumption and nutrition" that occurred in the prior two decades.

On the optimistic side, Brown says most of the reduction in the population growth rate has come through reduction of birthrates. This global slowing has been concentrated in Western Europe, North America, and East Asia—the latter being influenced by the success of family planning in the People's Republic of China where a precipitous drop in the birthrate, from 32 to 19 per thousand, occurred over a 5-year period.

Other nations, particularly in Latin America and Africa, show little progress, but there have been a few breakthroughs. Mexico, although it is still pouring more babies into the world each year than the United States and Canada combined, has backed off from its pronatalist policy and has so far set up 600 family planning clinics. Other countries are liberalizing their abortion laws—at the beginning of 1971, says the report, 38 percent of the world population lived in countries where legal abortions were available; now the figure stands at 68 percent. India is so desperate that it has become the first nation to consider mandatory sterilization.

Brown appears to dispute the notion, widely held by demographers, that a country must become industrialized and wealthy before it can undergo the "demographic transition" to a stable population. "Apparently, meeting basic social and family planning needs can drive down the birthrate even where income levels are not high." Proof of this is the People's Republic; other countries where decentralized family planning services are said to be effectively infiltrating rural societies are Cuba, Colombia, Thailand, and Indonesia.

He lists five elements needed for effective population reduction: provision of family planning services; good basic nutrition and reduction of infant mortality; education on the effects of overpopulation; economic and social policies that encourage small families; and equal rights for women, including the provision of alternative careers to motherhood.—C.H.

against this kind of federal intervention in academic life.) At a handful of other schools, including Indiana and Stanford, there is talk of rejecting capitation, but a survey of medical schools by the Association of American Medical Colleges (AAMC) indicates that not many are ready to put their money on the line on this matter. By a count of 6 to 1, the polled schools said the AAMC should not urge a presidential veto of the manpower bill.

The message that the new bill may indeed go too far has, however, made it to the White House. President Ford, in signing the bill, said he would introduce legislation to amend the provision which he declared "undermines our medical schools' admission policies by imposing Federal law to override an individual school's admission criteria." If an amendment is brought before the Congress, as is likely whoever is in the White House, the schools may never be forced to take a stand. At present, there is no reason to think that the Senate would object to modifying the law. Spokesmen for Rogers were unavailable to comment on the question.

Ford also noted his opposition to the manpower bill on another ground. He says that, at $2.3 billion over three years, it costs too much. Clearly it is a very expensive piece of legislation, and one can reasonably ask whether it is worth it in light of what it is meant to achieve.

The manpower bill rests on two premises. The first is that there is a great inequity in the distribution of doctors and other health professionals in this country and that, inasmuch as the public is paying educational costs and then buying services, the inequity must be resolved. Surely it is not fair that inner city dwellers be denied access to decent medical care. And there is no doubt that prompt medical attention to a strep throat goes a long way toward preventing rheumatic heart disease, for example. Access to a doctor is important.

But there is another premise underlying this bill, and it stands on less firm ground. Namely, it is the idea that there is a direct relationship between the health of a population as a whole and the presence of a doctor. In fact, it is quite a suspect premise. The cost of this bill, in terms of dollars and federal intervention in academic life, is high. And the health of the poor depends as much, if not more, on access to nutritious food and well-heated homes as it does on the presence of a doctor down the street. It is not clear that this is the best way to spend $2.3 billion.—BARBARA J. CULLITON