When Borges Came To Washington University

From September through May, Washington University’s weeks are punctuated by visitors. They come at the behest of a department, a school, a student group. They lecture, talk informally, answer questions, lunch, meet with classes, are guests at receptions, small and large. They are the spice of University life.

On April 12 and 13, Jorge Luis Borges, Latin America’s most renowned man of letters who is now eighty-three, came to campus. His aged presence spread a sunshine glow over the hundreds who heard him, spoke to him. In return, his University hosts took him to Hannibal, Missouri, where the curator of the Mark Twain Museum arranged a day.

“I don’t think of it (Huckleberry Finn) as a book,” Borges told a reporter. “It’s something that you can’t think away.” Borges dipped his hand in the muddy Mississippi, handled Twain’s possessions, experienced Hannibal. He was pleased; he wept.

W hen Borges came to Washington University, a group of professors gathered to talk with him the night before his speech. He settled himself deep in an armchair, holding a cane, hollow and thus “light but sturdy.” A Chinese cane, he told us, that he had bought in Chinatown. Polished bamboo with grooves as if worn by his fingers. His white hair was thin, his eyes blind since 1955. But he could see enough—or was it only sensory?—to ask to sit by the fire to watch the flames. To each voice he turned his head, reached out to touch, asked me to sit on the arm of his chair, close. He began in French because, he explained, “I was in Geneva from 1914-20 and in Paris in 1921.” There was a poet from Bayonne, Toulet, he recalled and wondered if I would like to hear some of his erotic verse. I said yes, and Borges found two lines about loneliness and coupling. That led him to verses in Latin from Virgil and then on to Latin pronunciation and to the dilemma of the soft and the hard r. Then the soft and the hard c and all the words sprung from caesar: kaiser and czar and on and on.

“Because of my eyes, I can’t read; I can only reread. I can’t write, I can only dictate. I get tired, very tired, at my age. So I travel. Everywhere. I would like to go to Japan, to Iceland, to Geneva, to Venice.” He explained that he was rereading Voltaire’s Louis XIV, all of Voltaire in fact.

Just the day before, he had been to the Cloisters in New York. What could he have seen—a tapestry, the twining leaves of a stone capital, an ivory madonna delicately holding the Christ child on her hip? Did he run his hands down the folds of her gown sensing the pilgrimages and revolutions that had smoothed it? The next day after his talk he would go to California where a library would be dedicated in his name—where exactly, why, he didn’t know.

And me, when did I come from France? No. I have never left St. Louis or even this quartier. Do I know all of St. Louis’s jazz, and he began to sing “St. Louis woman with all those diamond rings.” Jazz and New Orleans and Preservation Hall, there is no other city like it in the world. “But why,” he asked, “do you call it the Deep South? Why can no Americans explain? Not deep in the south or far in the north—but the Deep South.”

In the chapel, he spoke in English, and William Gass wore a tie to introduce him. The afternoon sun lighted spider webs on the brass fixtures. Students with no shoes on brought daisies and daffodils, stood in the aisles, squeezed together in the pews, rustled in backpacks for paper to take notes, applauded and questioned and applauded again though they could scarcely hear the wisps of Borges’s words.

Gass talked of hundreds of introductions, of how to begin with Borges. And Borges said, “Borges is nonexistent!” from a red leather chair where he gave his talk. He rested his hands on that cane he had bought in Chinatown. In the moments when his words halted, when his lips ran ahead shaping nothings, he lifted one hand from his cane, gestured and molded the air with fingers as flexible as a sculptor’s, to fill the silence. As words recommenced, his hands lay once again still.

It was of Whitman he spoke, of the participation in poetry. Of writers he loves: Kipling and Emerson, Poe and Tolstoy, the second part of Don Quixote and the symbolist poets. He told us about the rigor of free verse, advised us to begin with the fixed poetic forms, suggested that prose is the most difficult to write, that the short story provokes the densest of meaning, that novels are full of padding and digression.

To be so old and to remember a stanza discovered in 1917, to date eras of a life by a reading of Emerson or Longfellow. To be so old and hear voices echoing in the chapel, calling out timid questions to test young poetic theory. “Let’s chat,” he said “Chat about my ideas and yours.” The hands were slow to rise—one by one—and Borges warmed to the exchange. He commented on myth-making and happiness, on reading and its pleasures, on teaching himself Icelandic, on suffering and writing. He is, he announced, a good reader, maybe not a good writer, but a fine reader. Gass said only one more question: Borges said, no, three more.

At the end, the students rose all together and clapped and waved their notebooks and their flowers in the air.

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What is it?
For Phil Needleman, Ph.D., filling the shoes of Oliver Lowry is the most challenging task he will ever undertake. He does it, not Lowry-like, but with a style so full of gusto and naive charm that the patina has gently replaced the polish. He is a kid from Brooklyn, a little rough around the edges, but brilliant, forthright, warm, sensitive, probably abrasive, full of freshness and honesty, compulsive and impulsive. He measures people by their productivity, but has the good sense not to set that standard by his own.

At forty-three, he is head of the department of pharmacology at Washington University (succeeding Lowry in 1976) and a foremost expert on prostaglandins. In the heady atmosphere of world-class science—measured by Nobel Prizes and election to the National Academy of Science—he is a competitor. He didn’t set out to be, but if that is the top, he has no alternative. When eventually he wins one of science’s brass rings, he’ll be flabbergasted and ambivalent. For years he sought his level of competition; now that he has found it, his admiration of colleagues bubbles up like a spring of fresh water. It fills him with cockiness and humility. The combination is wonderful.

Asked who runs his lab, he answers, “Dammit, I do.” But his eyes twinkle at this impertinence, and he says with awe, “I am the product of my environment. It’s unlikely I could have become what I am anywhere but here.”

“Here” is the Washington University School of Medicine, to which he came in 1964 as a postdoctoral fellow under F. Edmund Hunter, Jr., Ph.D., and then Oliver H. Lowry, M.D., Ph.D., and at which he remains despite numerous offers from elsewhere. Last year in sheer mischief, Needleman asked a persistent dean, “Why would I want to leave a city like St. Louis for one like San Francisco?”

Needleman’s loyalty is not to St. Louis, but to the School of Medicine. “Perhaps we are parochial,” he says. “Charlie Parker (professor of medicine) has been here since he was a medical student. Paul Lacy (head of pathology) came directly from his doctoral work; Dave Kipnis (head of internal medicine) came as a postdoc. But if you do good science in St. Louis, you see the world. Your work is in the top journals, you get invited to meetings, you go to see other people, they come to you.

“Kipnis, Lacy, Ken King (head of the medical school), Ollie Lowry are some of the people who keep me here. But it’s more than that. I know of no other place in the world where the head of internal medicine—a clinical department—would stand before top visitors to attest eloquently to the vital importance of strong basic science departments to his work. That’s fabulous.

“But it’s even more than that. Dave (Kipnis) not only recognizes the importance of basic science, he does it. His own science is excellent. Much of the science here is.”

“Phil Needleman’s is,” says Paul Lacy. “His work is superb and he overflows with enthusiasm about it. He’s infectious. This spring was the fourth time the senior medical students have voted him Teacher of the Year. Phil sets extremely high scientific standards. That’s almost an anachronism. Lots of people are enthusiastic, but their work isn’t very good, so their enthusiasm is almost embarrassing. And lots of people who do good work can’t communicate any excitement about it. But Phil does both, and he’s just a joy to have around.”

Oliver Lowry, Needleman’s mentor, has a bird’s-eye view of Needleman’s work. “Phil has made decisive contributions to three fields of pharmacology,” says Lowry. “He was the foremost investigator of organic nitrate metabolism—from the description of the pathways involved and the properties of the enzymes concerned to the activities of metabolites and sites of metabolism. His demonstration of the liver’s enormous capacity to inactivate these compounds forced changes in how they are used in medical treatment.

“He participated with Garland Marshall in discovering the first specific competitive antagonist of angiotensin II, a vascular constrictor involved in renal hypertension. He used this antagonist to demonstrate how the renin-angiotensin system works in normal and disordered kidneys and how angiotensin and other substances interact to control renal blood flow and renin release.

“And since the early 1970s, Phil has been at the forefront of prostaglandin research, studying certain pathways of arachidonic (ah-ra-ki-don-ik) acid metabolism to explore an enormous potential to control blood clotting disorders.”

Prostaglandins (PG) are a large family of substances produced in almost every body tissue from fatty acids. They were identified independently in the 1930s by Maurice Goldblatt in England and Ulf von Euler in Sweden. Studying human semen and the seminal vesicular glands of sheep, both observed striking effects on muscle...
Needleman and M.D., Ph.D. candidate
ted McCusky review X-ray of
cromatic gram in which they discovered
some novel prostaglandin-like
compounds produced by isolated
rabbit heart.

Needlecraft

tissue and blood pressure which they attributed to
these potent substances.

Despite this early work, because the substances
were hard to study, little understanding came for
two decades. The body normally produces only
micrograms of prostaglandins a day and although
some are relatively stable, others remain in active
states only minutes or seconds.

In the 1950s, the discovery that acidic lipids
(fatty substances) from many sources owed their
biological activity to prostaglandins renewed
interest. Two Swedish scientists chemically
identified fairly stable substances they called PGE
and PGF (the E indicates ether extractibility and
the F “phosphorus” — Swedish spelling). Bengt
Samuelsson of Sweden, today recognized as the
world’s expert, worked out the structure and
characteristics of additional family members.

Recent interest and information, growing
now exponentially, has focused on
prostaglandins’ properties for control of
blood pressure, vascular smooth muscle constriction
or dilation, and blood platelet aggregation, which
causes blood clots. These translate into using
knowledge of prostaglandins to formulate drugs to
treat hypertension, other vascular disorders
including thrombotic incidents such as heart
attacks and strokes, asthmatic diseases, dietary
deficiencies, gastric disorders, renal diseases, and
many reproductive disorders. The list is not
exhaustive because clearly these substances play a
critical role in mammalian physiology.

Prostaglandins are twenty-carbon carboxylic
acids synthesized in the body from certain poly-
unsaturated fatty acids. Their most common
precursor is arachidonic acid. Its conversion to
prostaglandins, taking place on the cell wall,
fundamentally regulates cell function.

Although the body produces prostaglandins in
almost every tissue, it does not store them. They
are converted on the spot in response to various
stimuli including hormones, nerve excitation,
decreased oxygen tension in the blood, or injury.

The initial step from arachidonic acid is carried
out by an enzyme called cyclooxygenase to produce
very unstable intermediates known as PG
endoperoxides. From these, different tissues use
different enzymes to convert the endoperoxides
into different products, most of which are
prostaglandins.

At the first step in this pathway, aspirin and other
nonsteroid, anti-inflammatory drugs can inhibit
prostaglandin formation by blocking the enzyme
cyclooxygenase. Given in high dosage, however,
aspirin would block all prostaglandin formation,
and that would not be desired.

“My laboratory is generally interested in what
the body converts arachidonic acid into and the
function of those products,” says Needleman,
“but our work is only one part of this medical
center’s world-renowned arachidonic acid
metabolite research. Phil Majerus’s laboratory (in
hemology/oncology) is looking at the mechanisms
in the reaction of aspirin and the critical enzymes
that release arachidonic acid. Charlie Parker (in
immunology) has been involved in discovery of a
substance released in immune responses that is
part of a new field called leukotrienes. Charlie and
Barbara Jakschik determined the involvement of
arachidonic acid in leukotriene synthesis. In
essence, an allergic reaction — say a severe
asthmatic attack — is probably due to this substance.

We now have inhibitors to block its action and may
soon have a dramatic new treatment. Aubrey
Morrison (in medicine/pharmacology) has dis-
covered major new non-prostaglandin arachidonate
products made in the kidney and has some
important insights into the chemical basis of some
kidney diseases.

“I’m generally interested in how prostaglandins
and a non-prostaglandin called thromboxane
function in the heart, blood vessels, platelets, and
kidney. Our main business is to uncover metabolic
pathways — to learn how substances move from one
form to another — so we can understand potential
sights of intervention. Understanding chemical
structure isn’t enough. We have to understand the
biology, what it does in the body. When we
know those, we can manipulate it. That’s what
pharmacology is — the chemical manipulation of
biology. From there, our noses lead us into a lot
of places.”

In 1975, Needleman decided that after three
years, during which he and Garland Marshall,
professor of physiology and biophysics, were
on top of their angiotensin research, he would turn
to new work. “All that was left with angiotensin was
to slug it out. The conceptual work was finished and
slugging it out isn’t what we’re best at. Our trade is
creativity, so I put on the blackboard every
known action of angiotensin we could study since
we now had a blocker. It came down to one of two
interesting possibilities — angiotensin-induced
release of aldosterone or of prostaglandins, and
I asked, what's the prostaglandin stuff?"

In educating himself on the basic question, Needleman found that John Vane, a renowned English biologist, knew prostaglandin bioassays best, so he went to study with Vane. "I spent seven days learning all I needed to know," he says. In applying this new knowledge, Needleman and Jim Douglas, an M.D./Ph.D. student, proved that blood vessels themselves make prostaglandins and that these are powerful blood vessel dilators.

Shortly, however, with the prodding of the newly arrived chief of cardiology, Burton Sobel, Needleman turned to study the heart. "Sobel was building a specialized center here for cardiology, and we became instant friends. My lab team quickly discovered that the heart makes prostaglandins, and that these are synthesized primarily in the cardiac vasculature. Then we found that the heart and the blood vessels were making the same prostaglandin, but not the prostaglandin we had anticipated. We realized that it was a powerful new dilator substance, and we suspected it was very labile."

To prove this, Needleman and his co-workers stimulated the heart with the peptide angiotensin, eliciting a change that caused the heart to produce its prostaglandin. Then they used aspirin to block the response, and that worked; but when they readded the prostaglandin E2—which everyone thought the heart made—it didn't work. The readdition did not mimic the response they got from whatever the heart produced naturally. They were dealing with a new, unknown prostaglandin.

Although they demonstrated that it came from the endoperoxide, they could not identify it, so they took another analytical tack. If "A" was arachidonic acid, and "B" was the precursor endoperoxide, and "C" was the unknown, short-lived prostaglandin, what could they find left when "C" broke down? They identified that breakdown product as six keto prostaglandin F1α, and they found that this material was the primary arachidonate product coming from either the heart or isolated blood vessels. Further, they demonstrated that the rate and amount of production of this material correlated directly with the vascular tone relaxation. There they stood and might have remained for some time, but for two outside events.

Needleman had agreed to spend the summer in England at Vane's new Burroughs-Wellcome laboratory, but first would attend a prostaglandin meeting in Florence. "There, Samuelsson electrified the meeting with the discovery of an arachidonic acid metabolite also produced from the endoperoxide intermediate called thromboxane, which was made in platelets. It is the body's most powerful blood vessel constrictor and platelet aggregator. When I got to England, I made a poor man's enzyme system for generating thromboxane and an instant benchside assay system so that we—or anyone—could study it. As a result, that summer we discovered the first drugs that could block thromboxane formation. At summer's end, I left the platelet assay system in Vane's laboratory, but came back with a system for preparing platelets so I could add the precursor and instantly make thromboxane. (Thromboxane only lasts for thirty seconds, so you need to instantly or continuously make it to study it.)"

"When I left, Vane and his people used our platelet system to test other tissues. When they came to blood vessels, they found that the precursor did not make thromboxane, but made something that was a powerful dilator of vessels and inhibitor of platelet clumping."

"We knew we were probably looking at the same new short-lived prostaglandin, but we couldn't elucidate its structure and neither could they. Vane called the Upjohn Company in Kalamazoo—Upjohn has some of the world's best prostaglandin chemists—and said, 'We now know the precursor; we know the stable breakdown product (6keto-PGF1α); and we know that the labile substance in between is a powerful inhibitor of platelet aggregation,' and Upjohn and Burroughs-Wellcome signed a research agreement. The Upjohn chemists synthesized every conceivable structure that the new prostaglandin could be. They compared each to the biological product and identified the unknown, now called prostacyclin."

The blood vessels produce prostacyclin and not thromboxane, the platelets produce thromboxane and not prostacyclin, but both substances have the same precursor (the endoperoxide). Prostacyclin relaxes the smooth muscles to dilate the blood vessel, and it prevents platelet clumping. It is the body's natural antithrombotic agent. Thromboxane constricts blood vessels and causes platelets to aggregate, thus forming a blood clot. They are natural antagonists.

Normally, since platelets do not aggregate, little thromboxane is produced. When a vessel is injured, platelets pile up at the damaged site and release

This year for the fourth time, Needleman won the Teacher of the Year award given by senior students.
thromboxane. It calls in other platelets to build a blood clot, and it squeezes the vessel walls around the thrombus. Sometimes this is the body's protective mechanism to seal a severely damaged vessel. But many diseased states produce a thrombotic disorder—clumps of platelets are built and thrown off, and their presence blocks normal blood flow, causing ischemia—a supply of blood inadequate for normal organ function.

In the brain, clots may cause transient ischemic attacks—painful, but short warning signs or severe strokes. In the heart, they may cause angina pectoris—another warning sign—or a damaging heart attack. A prevailing hypothesis regarding atherosclerosis suggests the initial event in that disease also involves platelets.

Prostacyclin offers a natural agent to inhibit platelet aggregation. It is being used in Sweden, Poland, England, and the United States to treat blood in contact with a foreign surface (a situation in which platelets tend to stick and clump), such as in hemodialysis, hemoperfusion, or cardiac bypass surgery—"but prostacyclin will never be a great drug," says Needleman. "It is too short-lasting and has the major side effect of dropping blood pressure. We believe we now have an analog that works on platelets, but not on blood vessel walls. It's a preliminary agent, but the concept of a more specific drug is there."

"And we've already discovered a thromboxane that is a constrictor but not an aggregator. So by chemical manipulation and using biological systems, we've learned to separate the properties of each. And along the way, drugs that inhibit the enzyme that produces thromboxane have become important. So by concentrating on understanding the arachidonic acid metabolism in the interaction of platelets and blood vessels, we have many end products that have stimulated a lot of interest. Sometimes it's more important to know the function of the various metabolites than to try to administer them. For instance, if you block the enzyme that turns the PG endoperoxide into thromboxane, you not only turn off the whole noxious constrictor-aggregator system, but also shuttle the precursor from platelet to blood vessel where it produces the antithrombotic dilator prostacyclin. Now that would qualify as one of Paul Erlich's 'magic bullets.' The drug is where you want it with no other effects. If it isn't needed, it is harmless; if it is, you have not only blocked that noxious effect, you have increased production of the natural antagonist.

Many companies are either developing thromboxane synthesis inhibitors or clinically testing them."

Needleman's research also has taken another pathway to treat chronic thrombotic disorders. "We studied a novel fatty acid, eicosapentaenoic acid (EPA)—which is present in large quantities in cold-water fish—that suppresses the body's ability to aggregate platelets. Platelets incorporate it in place of arachidonic acid and that partially depletes the body's supply of the arachidonic acid necessary to produce thromboxane. Then the EPA effectively blocks that conversion of arachidonic acid to thromboxane. People who ingest EPA in great quantities naturally, such as Eskimos or Japanese fishermen, show suppressed ability to produce thromboxane and aggregate platelets. Now, since to do this requires large doses of EPA, it's unlikely to be used alone, but probably will be used as a dietary supplement along with a thromboxane synthesis inhibitor."

As work here and elsewhere yields new understanding of the body's use of these potent arachidonic acid metabolites, Needleman and his colleagues apply that knowledge to other studies. "Actually, I'm surrounded in my lab by highly motivated people—I may be the least manic among them, well, not the least, I guess—and we're all studying different kinds of tissues. We bounce here and there. We use novel fatty acids, novel tissues, animal models of disease. We use many kinds of analytical techniques—bioassay, radiochemistry, immunoassay, high pressure liquid chromatography, and, in collaboration with Aubrey Morrison, GC-mass spectrometry. This institutional setting for arachidonic acid metabolism is one of the best in the world."

If, at sixteen, anyone had told Needleman or those who knew him, that he would be a scientist, all would have doubted the predictor's sanity. "In their graves now are people who would turn over," he says with a grin.

Brooklyn-born of immigrant parents from Russia and Hungary, Needleman says of his childhood, "I lived on the streets and learned to roll with the punches. I was actively in pursuit of life, you might say. I was president of my high school fraternity, played football, dated, was a terrible student. I was accepted in pharmacy school because they automatically took sibs and my brother was a student there."

"Then in the summer between high school and
Pharmacy school, I met Sima, my future wife. She was a fantastic student—second in her class in a giant high school and on an accelerated program—and I surely wanted to impress her. So I bought a tie and sat down in school and studied. Much to my shock, I got an A on the first test.

At Philadelphia College of Pharmacy, Needleman fell under the spell of a pharmacologist, G. Victor Rossi, a superb teacher. "If he'd taught botany, today I'd be looking at something like palisade cells in the plant." After two years of pharmacy school, knowing that he did not want to be a pharmacist, Needleman applied for graduate work under Rossi, though Rossi had said he would only take students from elsewhere to build a national program. "I figured I had to dazzle him, so I learned pharmacology like no undergraduate ever had. And he accepted me in 1960, and I studied with him for an M.S. in pharmacology." In 1962, Needleman began doctoral study in the pharmacology department of the University of Maryland Medical School. "I didn't know much by then, but I knew that to be good in pharmacology, you had to understand biochemistry, so I asked for a thesis problem involving biochemistry. They had a problem they couldn't solve, so they gave me that. I thought their problem was analytical and thought I knew the solution. They didn't think so and the library was closed because it was Washington's Birthday, so I just tried it and it worked. Well, they decided I was a hotshot, so they left me alone. The next time I saw them, I was turning in my thesis. On the way, I'd discovered all the metabolites of nitroglycerin."

Needleman was offered an NIH position in Bethesda that he intended to accept until a man he respected, who had been on sabbatical to work with Lowry, suggested Needleman study under F. Edmund Hunter at Washington University. "That week Ed had three Journal of Biological Chemistry articles back to back, and I thought, wow, JBC, the holy grail. I applied, was interviewed, and then accepted.

"So I came, and for four years I was a sponge trying to learn everything I could. I realized I'd never seen varsity science, never had any idea what it was." After a year under Hunter and another under Lowry, Needleman won an American Heart Association Advanced Research fellowship for two years of support between postdoctoral work and a staff position. "When I had to get a job, I had my pick because I'd trained under Ollie. Michigan State offered me a good salary, automatic raises, 1200 feet of space, technicians for two years, and big seed money. And sometimes Ollie doesn't talk so straight. He kind of offered me an instructorship at a modest salary, the same space I had, and no seed money. So I figured he didn't want me, but I stayed up all night talking to a young pharmacology staff member and he went to Ollie and on the following Monday, Ollie
Needleman discusses with medical students recording dealing with kidney’s production of prostaglandin.

Needleman said to me that lots of people want to come here, but maybe he could make me an assistant professor (which didn’t matter much to me) still at the modest salary, no seed money, and the same space. But he put his hand on my shoulder and told me he wanted me to stay. And I took it.

“I knew that learning biochemistry from people like Ollie, Roy Vagelos (then head of biological chemistry), and so many other splendid scientists was an opportunity I couldn’t get elsewhere. And I was also interested in teaching and Ollie let me have pretty much a free hand in that.

“I struggled at research for a couple of years more, but I was learning the criteria of experimentation and what to do when I had a discovery. I went back to the nitroglycerin problem and it went well. I was lucky in research thereafter.”

In 1976, when Lowry retired as head of the department, Needleman succeeded him. “I want you to know the kind of department I inherited,” he says, taking from the shelf a department history compiled by Hunter.

In its pages are the names of its chairmen, leaders in their fields and sometimes Nobel Prize winners: Charles Guthrie, 1906-1909; Joseph Erlanger, head of physiology and pharmacology, 1909-1910; Hugh McQuigan, 1909-1910, acting head until a separate department was formed; Dennis Jackson, 1910-1918; E. Kennerly Marshall, Jr., 1919-1921; Herbert Gasser, 1921-1931 (Erlanger and Gasser shared the Nobel Prize in physiology and medicine in 1944); Carl Cori, 1931-1947 (Carl and Gerty Cori, a faculty member, shared the Nobel Prize in 1947); Oliver Lowry, 1947-1976 (a member of the National Academy of Science and recipient of many other awards); Philip Needleman, 1976.

In this history, Hunter writes, “When Washington University needed a promising young man in the pharmacology chair, it had to look no further than Carl Cori (Cori was thirty-four). His appointment exemplified the basic philosophy of appointing top-quality people regardless of the formal training. The same was true with Lowry’s appointment. These men were interested in the biochemical areas that promised much for the future. Their appointments were not received with joy by classical pharmacologists, and it took some time and pressure to get them elected to the American Society for Pharmacology and Experimental Therapeutics. Also, Gasser was more a physiologist than pharmacologist, pursuing scientific knowledge without regard to whether it was classical pharmacology or not.”

And later, “Like Cori, Lowry had a broad view of science and was concerned more that investigations involved significant and fundamental areas than that they involved classical pharmacology. His stature as a conceptual leader has never been diminished. Before Lowry accepted, it became obvious to him that the action of drugs on the central nervous system could never be fully described until one knew a great deal quantitatively about the biochemistry of all kinds of cells. This might take more than a lifetime, but here was a challenge not directly addressed by pharmacology of the time. He made this a major commitment and has never wavered from it.”

The department that Phil Needleman inherited, he maintains with an upbeat in tempo. Within pharmacology, there is almost no lunchtime. Monday, Thursday, and Friday are brown-bag
days. Monday and Friday are journal clubs. From predoc to department head, everyone attends, everyone takes a turn at presenting a current paper not in his or her field ("so you don't talk in code"). "What you do is an act of critical discussion of science. On Thursday, you present your own laboratory work and it's friendly, reasonable, and tough. Then in my own lab each Friday morning someone talks about his or her work. What we do as a department is improve our individual chances for creativity by constantly rubbing ideas." Then he muses, "I guess it's a little unforgiving if you're not productive."

The department is buoyed up on its manic tide by its head. By now, some one- to two-dozen members begin the day at the University's Olympic-sized swimming pool. Needleman starts at 6:30 a.m. to do forty-four laps every workday. For him, that is six days a week.

But he leads them elsewhere, as well. Several years ago, he stopped Margaret Phillips, departmental administrator, one morning with the question, "Margaret, how would you like to do something you'll never forget?" Naturally she responded with a question, and he with, "Let's all go to Chicago to see the Tut exhibit." And they did; eighty persons on two chartered busses leaving at 1:30 a.m. to be at the door of the Field Museum of Natural History at 8 a.m. for a private showing, followed by other sightseeing, and home after dark.

On a Saturday evening this May, during medical alumni reunions, Phil Needleman was named to the first Endowed Medical Alumni chair. On the same evening, he received his latest teaching award. Proud as he is of the former, the latter still gives him great pleasure. "I think I still emulate Rossi, the guy who taught me pharmacology," he says. Many students say Needleman teaches like no one else.

"He's tough, but he's so enthusiastic," said Stuart Sherman, a senior. "What is amazing is that you know he's given that lecture sixty times and he's as excited on the sixtieth as he was on the first. We tried not to vote him that teaching award, he's gotten it so many times, but in conscience, we couldn't."

"I think it's interesting to relate about Phil," said both Adrienne and Oliver Lowry on separate occasions, "that recently at dinner we were discussing the world's graviest problem. We each took a turn, and Phil said he believed it was a lack of optimism, that all of the problems we had named could be solved if tackled with enthusiasm. It was surprising, but, on reflection, characteristically Phil."

"You know," says Needleman, "you are only as good as your competition. I was absolutely in awe of this department, the whole medical school, when I came, and that's never really changed. Ollie is one of the greatest role models ever in science. He is a man who finds real pleasure working at the bench wide open. And he has set the tone. The interdepartmental collaborative opportunities here are extraordinary. There is hardly anything I need expert advice on, that I can't find in this institution. And it's easy to find collaborators who get excited about problems that are of common interest."

In early 1970, Needleman began a collaboration with Garland Marshall that not only resulted in discovery of the first angiotensin receptor blocker, but for three years kept them ahead of the competition. "I needed an amino acid and someone said I should meet a new guy upstairs in physiology who was studying them. One of my failings—and maybe my strengths—is I can't resist talking science with people. He was looking at angiotensin analogues, changing structures to see what he got, and I asked what it did biologically. I think for the moment, he'd forgotten it worked biologically. We talked about an experiment together, but didn't do it. Then, in June 1970, he brought me a compound and asked if I'd test it. That day we discovered the first angiotensin receptor blocker. Twenty days later, we dragged a desk into the unfinished fourth floor of McDonnell Medical Sciences Building, and wrote a paper for the Proceedings of the National Academy of Science.

"I dropped my nitroglycerin work because we knew just what to do with the angiotensin blocker. We could do it fast and clean and beat everyone. And getting into prostaglandins in the mid-1970s with a timely marriage of bioassay and biochemical techniques was the same."

"I don't know how it happens or where the ideas come from, but this institution is a unique place that nurtures creativity. I've been especially fortunate to be surrounded by excellent postdocs, predocs, technicians, and colleagues. It's forced me to be an atypical pharmacologist, but a renaissance scientist."

"We're called what we teach, but the scientific lines here are all blurred. What I know is that we just keep picking up rocks and finding things under them."
"Beware of all enterprises that require new clothes."

Henry David Thoreau

It comes to campus from late fall through spring; sometimes worn, sometimes carried on a cleaning-bag-draped hanger like any costume.

Ask a student. He or she will give you a description. It will have some variation, but little.

Ask a placement officer. He or she will confirm its obligatoriness, but draw less tight perimeters.

Ask an interviewer. You can almost hear the smile by telephone, but it has in it a wistfulness, a sigh. What students believe is exaggerated, but alas, always safe, and perhaps justifiably so.

It is hard for students to tolerate even gentle ribbing on the subject. For them, it is deadly serious, their life's blood, their symbol of passage. They do not smile when they talk of a young woman who dared to make and wear a purple tweed with a lavender blouse, of their own selection of a jacket without a collar or a pin stripe to express their own individuality. They anguish over questions of whether they would wear open-toed shoes, keep their long hair loose, wear makeup or scent, whether a vest is necessary, if dark blue can be deviated from, if beards must be shaved, hair trimmed short.

They need a job; they cover all bets.

"It's hard to treat a subject sanely when people can make fortunes out of the notion 'dress for success,'" says Peter Warshaw, director of career planning and placement services at Washington University. "The interview suit gets everyone to base line, to point zero. You don't want an interviewer to remember what you wore, but what you said. So to do that, there is a uniform. It depends on the job you want, but students always play it safe. We spend maybe ten minutes of a two-and-a-half hour workshop talking about dress, but they worry more than that."

"They feel safe in a suit," says Janet Kevrick, director of engineering placement at the University. "We tell them it is more important to be clean and neat than to wear any certain thing. They believe that, but they don't trust it, so they buy a suit. And
On page 10, Beth Riethmann, a senior in business, now works for Centerre Bank in St. Louis. Below, Dale Martin, a senior in engineering, has a summer job with Sperry Univac in St. Paul and will return to campus in the fall to begin an M.B.A. program.
they’re right, a plain suit, blue or grey or brown, a white shirt or blouse, a conservative tie, dark shoes and socks—that’s safe. If it’s three pieces, that may be safer.”

“What is one to think when the man who comes to repair the typewriter wears a three-piece blue suit,” says John Rieser, manager of corporate employment service for Ralston Purina Company. “The awareness of a uniform begins in junior high school or before. There’s a uniform for the high school formal dance—and it is different than when I was in school, it’s not a tux. There is a uniform for the singles bar; there’s a uniform for class at Washington University; there’s a uniform for business, and that’s very conservative. When students are leaving the campus and coming into business, it seems appropriate that they try to approximate the business uniform.

“It’s stupid. And a book called Secrets of a Corporate Headhunter overstates the case, but it’s not far off. I saw a very talented young man lose a job over shrimp. He became so engrossed in shelling and enjoying the boiled shrimp that he forgot to pay attention to the ritual that was going on, and it was a very formal ritual that said this was a business lunch and you didn’t get engrossed in shrimp.

“As corporate recruiters, we want to whisk past what people have on and the ten most asked questions to get to what really counts. I’ll sometimes fill in my recruiting schedule by just talking to kids and if I find someone who’s appropriate for us, I ask them to step in for an interview. I enjoy seeing kids in their ‘campus grubbies’—their word, not mine—because that’s a way to get past what they are wearing. But if an interview is scheduled, the uniform means we can forget that and go on from there. Recruiters don’t put on that pressure for a dark blue, three-piece suit and so on; it’s self-generated. We don’t like to fit images either.”

“It’s sad,” says Kevrick. “Some kids can’t afford it, but it does make a difference. Why give them a reason to knock you out! Once a recruiter said, yes, he’d see a kid who just happened to drop in then to inquire. Later, on our evaluation sheet, the recruiter noted that the student wasn’t appropriately dressed. I was angry, but I realized that recruiters are so used to seeing our students well dressed that he just forgot later why this student wasn’t.”

To students, the interview suit—bought for that purpose and worn religiously—will be what they wear to the office until they find out from experience what that uniform is. It may be only the first in a long line of suits; it may be the last. They’ll decide then; now they’re into interviewing and that they know, backward and forward, head to toe, inside, outside, upside down—the interview suit.
Has the American bar shirked its responsibility to consumers in its handling of attorney incompetency? Edward Imwinkelried, who joined the Washington University School of Law faculty in 1979, believes it has. He traces that handling—or lack thereof—through available procedures and discusses and evaluates new strategies being considered to readdress the matter.
The bar and the question of competency.

The American consumer movement has already reached the point of critical mass. It has triggered an explosion of changes in the legal relationship between consumers and the businesses which meet their needs. Legislatures have enacted laws granting consumers innovative forms of warranty protection; and for their part, the courts have taken dramatic strides away from their traditional caveat emptor attitude. The nagging question is whether the legal profession itself has been as responsive to consumerism.

In virtually every state, the profession is self-policing; the organized bar, operating under statutes enacted by the state legislature, has the privilege of administering the disciplinary system for lawyers. Typically, the statute charges the bar with the task of comprehensive professional regulation, including ensuring competence, as well as integrity, in law practice.

Many commentators charge that the bar has shirked its responsibility to legal consumers in the area of competence. Although it has used the disciplinary machinery to deter intentional misconduct, such as embezzlement of clients' funds, it has done little to address the problem of incompetency. In the words of two American Bar Foundation research attorneys, the bar has "searched for misconduct, moral guilt, and deviance," but largely neglected "substandard performance."

Now, chiefly under intense pressure from legal consumers, the bar is being pushed to abandon its attitude of neglect. Nationwide, roughly half of the complaints filed with bar disciplinary agencies relate to competence rather than intentional misconduct. Moreover, the number of malpractice suits filed against attorneys has virtually exploded. In 1973, only one half of one percent of American attorneys were the subject of malpractice claims. By 1983, one of every ten will be—a twentyfold increase in a single decade. Consumers, however, are not the sole voice calling for greater attorney competence. The judiciary is also bringing pressure to bear. As chief justice, Mr. Justice Burger has attempted to focus attention on the problem, especially regarding trial performance. And he is not alone in the criticism of trial practice. In 1979, a Federal Judicial Center survey of federal judges indicated that 41 percent of those responding believed that low caliber trial advocacy is "a serious problem."

At last, the organized bar has begun to respond. Its response centers upon a number of proposals for change, each with its advantages and disadvantages. The proposals can be classified as either remedial or preventive. Remedial proposals—which deal with attorney incompetence after its occurrence—have been in place for many years. In contrast, the preventive strategies are newer. They have developed partially in recognition of the inadequacies of the four major remedial strategies: namely, disciplinary sanctions, compulsory malpractice insurance, ineffective counsel claims, and malpractice suits.

If an attorney violates a provision of the Code of Professional Responsibility, the bar can take formal disciplinary action against the attorney including the sanctions of reprimand, suspension, and disbarment. But in practice this remedy is seldom applied against incompetence. One Code provision, Disciplinary Rule 6-101, seems to make incompetent performance a disciplinary offense. Thus, at first reading, one might think that the bar has the power to employ disciplinary sanctions against negligent attorneys; and a small but growing number of states have adopted this reading. However, in truth, most jurisdictions will not take disciplinary action unless the attorney is guilty of "gross" or "habitual" negligence.

This narrow interpretation of the Code is understandable. The bar is reluctant to invoke the formal disciplinary system to deal with incompetence because the system is dominated by a criminal justice model. It is aimed primarily at intentional misdeeds and both its procedures and sanctions reflect this model. Over the years, the bar and the courts have converted disciplinary hearings into miniature criminal trials—with most of the incidents of prosecutorial proceedings, including the fifth amendment privilege against self-incrimination. In addition, since the available sanctions, notable disbarment, are punitive, they reinforce the criminal model. It was expectable therefore that the bar would limit the grounds for discipline to misconduct with criminal overtones.

Now, however, the number of jurisdictions invoking disciplinary sanctions against simple negligence is growing. Within the past five years, several state supreme courts have changed their reading of the Code and announced that they will discipline incompetent attorneys. Despite these new moves, however, in most jurisdictions the disciplinary system remains unavailable as a
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Another after-the-fact strategy is to require all licensed attorneys to maintain malpractice (or errors and omissions) insurance. Certainly, an appealing case can be made for compulsory legal malpractice insurance. In other areas our laws now insist upon similar insurance. Some states require automobile owners to maintain liability policies, and a growing number of jurisdictions, such as Pennsylvania, have mandated that licensed physicians carry malpractice coverage. France has long demanded that attorneys have such insurance. Oregon has already decided to follow the French lead, and Wisconsin is seriously considering its imposition.

Critics contend that compulsory insurance would be unwise. Their chief argument is financial. In the early 1970s as the number of legal malpractice lawsuits skyrocketed, malpractice insurers, suffering heavier and heavier losses, responded in two ways. Some withdrew entirely from this market—at one point only two national carriers still wrote such policies. Others drastically hiked premiums—in the six-year period in the middle of the last decade, premiums increased more than 300 percent in some states.

Since 1978, premiums have been relatively stable, and there are now more than thirty national carriers offering legal malpractice coverage. However, Jury Verdict Research, Inc., of Ohio recently reported that carrier losses are again on the rise. In ten states, lawyers are so fearful of another round of whopping premium increases that the organized bar has created captive insurers—bar-funded or lawyer-owned insurance companies. But premiums are already so high that in some states, half to two-thirds of the practicing attorneys go naked without any malpractice coverage.

How mandating malpractice coverage would affect premiums is unclear. Proponents argue that increasing the population covered will drive rates down. Critics fear that it will have the opposite effect. They argue that it would create still another barrier for young law graduates seeking to join the profession. They charge that the profession already underrepresents minorities and lower economic brackets, and that the addition of this costly requirement will make it even less democratic. The critics' fears seem plausible; and unless Oregon's experience eliminates these fears, it is doubtful that there will be much movement toward compulsory insurance.

A third after-the-fact remedy for incompetence is available in criminal cases. If the attorney renders substandard services in a criminal case and the substandard performance contributes to the client's conviction, an appellate court may reverse the conviction. The sixth amendment to the Constitution explicitly guarantees criminal defendants the right to counsel, and the courts have broadened this guarantee to include a right to effective counsel.

But this mode of relief is highly unsatisfactory. To begin with, it is rarely granted. Although a growing number of jurisdictions evaluate the defense attorney's performance by the standard that the attorney must perform as a reasonably competent attorney would have under the same or similar circumstances, the traditional view is much laxer. It denies the defendant relief unless the performance was so abysmally bad that it reduced the trial to "a farce or mockery." That view is still the governing law in many states. In the words of Howard Eisenberg, executive director of the National Legal Aid and Defender Association, as a result of the "farce or mockery" standard, criminal defendants obtain relief on the ground of ineffective counsel in only an "infinitesimal number" of cases; the odds against obtaining relief are "almost hopeless."

And even in that infinitesimal number of cases, relief is at best a partial solution. The defendant is rarely released; he or she is usually retired—and more often than not convicted again. Further, the reversal has little deterrent impact on the negligent attorney. It may result in some adverse publicity, but that is the only sanction imposed directly on the attorney. The public loses the most: the government must incur the expense of the retrial. Thus, an ineffective-counsel claim is a woefully inadequate antidote for substandard attorney performance in criminal cases.

The final remedial strategy, the civil counterpart of an ineffective-counsel claim, is an action directly against the attorney for money damages caused by the attorney's negligence. Like the other after-the-fact remedies, this alternative is flawed. One flaw is that this form of relief can be quite slow. Each court maintains a calendar of cases on file in the court; while some types of cases are expedited to advance quickly to trial, most civil actions such as attorney malpractice suits are not. Consequently, it may be years before the injured
client receives compensation for the harm caused by the attorney’s negligence. In the Los Angeles area, a plaintiff can expect to wait more than five years after filing a complaint before trial begins.

Further, it is often expensive to prosecute a malpractice action. While some careless acts such as an attorney’s failure to meet a deadline are patently negligent, in most cases the courts demand the plaintiff present an experienced attorney’s opinion testimony that the defendant attorney’s conduct did not measure up to local standards. In short, the plaintiff client must not only hire an attorney to be an advocate in court; he or she must also have a second attorney as the expert witness.

Lastly, we cannot be confident that the outcomes in legal malpractice actions represent justice. To establish the defendant attorney’s liability, the client must prove that the attorney’s act or omission caused the client’s injury. The injury is often the verdict or judgment entered against the client. Hence, to prove causation, the client must show that but for the defendant attorney’s act, the first jury would have found for the client. The second jury must conclude that if the defendant attorney had presented a particular item of evidence in the first trial, the first jury would have returned a verdict for the client rather than the client’s adversary—a trial within a trial.

Proof of this type of causation inevitably involves an element of speculation about jury behavior. On the one hand, American courts routinely permit accident-reconstruction experts and physicians to testify on similar questions of causation in accident and medical malpractice cases. On the other hand, there is at least a difference in degree between those experts and an expert attorney in a legal malpractice action. The former experts rely on scientific rules that permit exact or, at least, probable predictions; but when a legal expert testifies about what the first jury might have done, that testimony relies on conjectural “rules” of psychology. Consequently, we have little assurance that the verdict in a legal malpractice case does justice to the parties.

In summary, the current remedial strategies leave much to be desired. In some instances such as disciplinary sanctions, the so-called remedy grants the injured client no relief for the attorney’s negligent performance. In other cases such as malpractice actions, we cannot be confident that the outcome is fair. In still other contexts such as ineffective-counsel claims, the remedy harms public interests. All these weaknesses are compounded by the inherently unsatisfactory character of any remedy that comes into play only after the damage has been done.

The undesirable character of after-the-fact remedies and their various flaws underscore the need for the bar to develop preventive strategies to forestall incompetence. During the past few years, the profession has, at least, begun this. There are several strategies under study.

One potential source of assistance for marginally competent professionals could be the advice of their colleagues. Other professions have implemented peer review and assistance strategies. The medical profession has done so, as has the American Institute of Certified Public Accountants. The legal profession lags behind.

Legal peer review and assistance holds promise as a preventive strategy. Attorneys have been notoriously reluctant to report to bar agencies the incompetence of fellow attorneys because many find the current disciplinary system—based upon a criminal justice model—too Draconian to apply to simple negligence. In contrast, a peer review proceeding can be private, not public; and the action taken can be counseling and education rather than punishment.

Some commentators, however, have been frankly pessimistic about peer review in the legal profession. One of these, Douglas Parker, professor of law at the University of Colorado, challenges the analogy to the medical and accounting professions. He initially argues that “(u)nlike the medical profession, the legal profession does not have an institution, similar to hospitals, in which peer review can take place.” He adds that unlike accounting firms, law firms “do not have a large dominating recurring operation in the nature of the audit function.... As concerns (this) practice, it is feasible for one large (accounting) firm to invite another firm to audit the inviting firm’s auditing principles and practices and its internal control procedures.”

Although Parker’s concerns are not frivolous, he may underestimate the feasibility of legal peer review. The profession has already taken several strides in that direction. With the sanction of the Judicial Conference, nine federal judicial districts are experimenting with it. Four state bar agencies (California, Oregon, Maryland, and Missouri) have peer plans in the drafting stage. At the national
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level, several organizations, including the Association of Trial Lawyers of America and the American College of Probate Counsel, are developing peer review plans for their specialties. Further, the American Bar Association has submitted its Model Peer Review plan to the state bars for their consideration.

While most peer review and assistance plans are still in the talking stages, one-fifth of the states have already adopted formal or de jure specialization programs that may help assure attorney competence. Increasing specialization is part of the natural evolutionary process of the legal profession. Legal historians tell us that in most societies, tribunals or courts emerged first, and their advent led to the development of an occupation of persons rendering services to parties appearing in court. The United Kingdom divides labor between barristers (courtroom attorneys) and solicitors (who perform such work as drafting and conveyancing). The American legal profession has long recognized formal specialties in arcane fields such as admiralty, patent, copyright, and trademark. Moreover, there is a good deal of de facto specialization in the American bar. Our modern law is so complex that it is difficult to remain competent as a general practitioner; some surveys indicate that well over two-thirds of American attorneys do specialize informally by limiting their practice to a small number of fields of law.

This widespread de facto specialization is one of the most powerful arguments for de jure specialization. Its proponents argue that the bar should channel the forces of specialization rather than leave them unregulated. The increased assurance of competence through this measure is only one argument advanced by its proponents. They make several others. To begin with, they contend that de jure specialization may reduce the retail price to the legal consumer: if attorneys specialize within a narrow field, they should become more efficient and occasionally realize economies of scale. Moreover, if attorneys can advertise their specialty status to the public, specialization will serve a useful contacting function. In an urbanized society, an increasingly specialized bar makes it difficult for the consumer to find an attorney specializing in the specific type of problem the consumer has encountered. The advertisement of specialties would help solve this problem. Lastly, de jure proponents argue that by devoting study time to a narrow field of law, attorneys will be able to increase their level of competency.

These arguments have been persuasive. Ten states have already implemented formal specialization plans of three types. One is certification, as in California. Under a certification plan, a candidate meets rigorous requirements, including an examination, for initial certification for the state bar; and to maintain the certification, the attorney must earn a required number of continuing legal education (CLE) hours in a specified time period. Another type is the New Mexico or designation plan. This plan permits attorneys to designate themselves as a specialist in a field of law if, during the past few years, they have concentrated a certain percentage of their practice time to that field. To maintain designated status, the attorney need only continue to devote at least that percentage of time to the specialty. The last type of plan—the compromise recommended by the American Bar Association—is a recognition plan. As under the New Mexico plan, the attorney can be recognized as a specialist on the basis of experience alone; but to continue recognition, the attorney must attend CLE programs as under a certification plan. Under all three types of plans, the attorney may advertise his or her specialist status to the public.

It would be a mistake to conclude that there is unanimous support for de jure specialization. For example, within the recent past, Arkansas, Kansas, and New York all have rejected such proposals. There are serious questions about the advisability of formal specialization. A certification plan such as California's is quite expensive to operate; a board is needed to supervise the plan, and there are expenses such as drafting and administering the test. The cost of certification plans seems prohibitive to small state bars. The plans could prove costly to some practitioners as well. If the plan mandates CLE and further requires that attorneys attending the CLE program pay to defray the cost of the program, those costs may prove substantial. Since attorneys in larger, wealthier firms can more readily afford the time as well as the expense to attend CLE programs, the fear is that they will qualify as specialists more easily than members of small- or medium-sized firms. Their additional advantage of being able to advertise specialist status will further handicap the smaller firms. If the net effect of specialization is to drive more business to the

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larger firms, the impact on the consumer may be a price increase.

These fears are plausible. However, they do not require outright rejection of de jure specialization; rather, they mean that the bar must exercise careful, prudential judgment in setting the level of requirements such as the number of hours of CLE attendance for specialist status. The requirements should be high enough to raise the level of competency, yet not so rigorous that they are practically beyond the reach of members of small- and medium-sized firms. Experience with specialization to date suggests that it is possible to fix well balanced requirements. In California, 35 percent of the attorneys certified have been with firms of three or fewer lawyers. In Texas, 61 percent of those certified belong to firms with five or fewer attorneys. The administration of a specialization plan will require care to avoid unfairly disadvantaged smaller firms, but the bar seems capable of exercising such care.

The final preventive plan for upgrading skills again involves mandatory CLE, but with a difference. The argument runs that all attorneys should be required to attend CLE programs as a condition to continued licensure. Other professions, including the accounting and medical professions, are far ahead of the legal profession in the development of continuing professional education programs. Certainly, the need for continuing legal education is critical. Some of the larger law firms sense this so acutely that they have established their own internal CLE departments. A whole new industry has been born—consulting firms that aid law firms in creating their own CLE programs.

Eleven states have mandated CLE for all licensed practitioners subject to their jurisdiction. To date, the response of the practitioners in those states has been largely favorable. Minnesota and Texas are two of the states with mandatory CLE. In a recent survey of Minnesota attorneys, 85 percent of those responding believed that mandatory CLE has improved their own competence. In a corresponding 1979 Texas survey, the figure was 79 percent. To quote the current American Bar Association president, David Brink, there is "more hard evidence" that mandatory CLE "enhances competence than there is as to any other approach to competence."

However, again we must sound a cautionary note. Mandatory CLE presents some of the same dangers as de jure specialization: if the CLE requirements are set too high, larger firms might be unfairly advantaged. Indeed, in this context the consequences are more drastic. If an attorney cannot meet the CLE requirements for specialist status, the result is that the attorney cannot gain the privilege of advertising specialist status; the attorney can still practice in any field of law. However, if the attorney fails to satisfy mandatory CLE requirements for licensure, the attorney will lose his or her license to practice. In the states with mandatory CLE programs, it is even more imperative that we exercise prudence in setting the level of CLE requirements. If we fail to do so, the result may be that we drive smaller firms—which typically charge lower fees—completely out of the legal service market.

To be sure, there are competency strategies such as self-assessment testing that we have overlooked in this short article. However, this article has tried to give the reader a sense of the fundamental direction of change within the profession. The modern strategies, especially the preventive approaches, hold genuine promise for increasing the competency of the legal services offered to the American public. If prudently administered, peer assistance, specialization, and mandatory CLE can raise the level of lawyer competency without driving legal fees out of the typical consumer's reach. Of course, that promise will be realized only if the organized bar's commitment to these programs is more than symbolic. As evidence of the sincerity of its commitment, the American Bar Association has made Rule 1.1 on Competence the very first provision in its new proposed Rules of Professional Conduct. In President Brink's words, "there is a single word to characterize the dominant issue for the legal profession in the 1980's: that word is 'competence.'"
A small, but important program has developed since 1977 between Washington University School of Engineering and Applied Science and Monsanto Company. Its success in teaching engineering graduates updated skills, particularly in mathematics and computer usage, proves that retrofitting is not only possible, but profitable.
RETROFITTING

by Trudi Spigel

They would give me, they said, a piece of their lunch hour. That, in their tight lives, was an act of generosity an outsider couldn't measure. Time is a most precious commodity when seventy or eighty hours of your week are spent in a strenuous effort to bring your mathematics up to date, master the computer, and hone rusty problem-solving skills after as many as thirty years away from the classroom.

They're engineers with a history of high performance at Monsanto Company, strong records in engineering school, and the will to prepare themselves for new opportunities and broader usefulness. They come from Monsanto plants in New Orleans; Pensacola: Charleston, West Virginia; Soda Springs, Idaho; and other outposts of manufacturing and processing, for a year of intensive retraining or new specialization at Washington University's School of Engineering and Applied Science.

These days, technology changes so rapidly that engineers often find themselves racing against obsolescence when they're not more than five or ten years out of school. Career paths can quickly turn into blind alleys, or worse, layoffs, as markets wither away or technologies change. In these shifting realities, engineers may find themselves with depth of experience in the company and its plant operations, but not on top of new developments in engineering. They find themselves suddenly with the wrong skills or not enough of the right ones.

Six years ago Monsanto's Corporate Engineering Division came to Washington University's School of Engineering and Applied Science with just such a problem. Like any large company, Monsanto constantly experiences internal shifts in response to economic and market pressures and new technologies. Some of these are acute, resulting in operations shutdowns and retrenchments that mean large-scale employee displacement.

"Often," says Monsanto's Gerald Kennedy, "we had good engineers who had gotten out of engineering into related jobs almost without realizing what was happening. When their operations needed to be changed, we could not put them into other engineering positions; they were too out of touch. So we would ask them to make career choices that were not necessarily positive—to accept another non-engineering staff job in the same location or another—in other words, sometimes with two minuses."

At the same time, the company needed people in chemical and plant processes design who knew the latest engineering technology and were aware of the client-plant's needs. Their own people knew the plants' needs—that was replicable experience—could they be given new engineering skills?

Washington University's Milorad Dudukovic and Monsanto's Kennedy decided that was possible given certain prerequisites. Since it would require concentrated study in new math and computer skills, they would look for candidates who had good academic records to begin with. Given that, they believed these men—who were most often in their forties and fifties—could be retrained.

The Washington University professional development program that resulted meshes individual potential with company need. A set of specialized courses brings engineers up to date in areas such as mathematical methods, computer technology, and problem solving. Mastery gives graduates the opportunity to return to engineering, to undertake, as they say, "second professions in engineering."

Since 1977 more than 100 long-time employees of Monsanto, most of them in midcareer, have returned to the company renewed, ready to undertake more interesting and challenging work. The benefits—both corporate and human—have been immense.

"We felt that we owed it to experienced people to funnel them back into active engineering when they opted for that," says Kennedy, who is manager of technical development for Monsanto's facilities and material staff group, "but we also needed their Monsanto experience: we put a high value on that. These people really know how to cut through the system and get things done. They know what it's like out in the plants, how design is to be used."

The program, directed by Dudukovic, professor of chemical engineering, began with the concept of retraining for Monsanto's central engineering design unit, the corporate center for design of plants' chemical processes. As it progressed, another option was added. The company was not getting enough good people in process control and instrumentation. For that option, Monsanto chooses promising younger candidates—persons in their thirties and forties—who are still practicing engineers, but who might be approaching the end of their engineering "half-life," and redirects them to a more upwardly mobile career tract. The same retraining structure serves both purposes. As the program stands, younger practicing engineers are taught to use modern computer technology and advanced math to
design and test industrial solutions, and midcareer engineers who have been out of engineering practice learn today's engineering concepts and skills. But updating—if it is to be done well—takes time and brings an enormous amount of personal anxiety. The program runs for a year, from January to December, with a month's vacation in the summer. Monsanto not only pays tuition and continues salaries, it offers and pays for several family options. Participants may move to St. Louis by themselves, leaving their families in place and visiting at company expense every third weekend. They may move their families with them to St. Louis for the year. Or they may work out some variation. Monsanto pays moving costs, transportation, and other expenses. “We offer to help families locate housing, but they usually prefer to help each other,” says Kennedy.

The most difficult period for both faculty and students is the first three weeks. During that time the faculty has to find out how much the students knew, how much they've forgotten, where they are in terms of skill and knowledge, what they need to learn in order to complete the program successfully. “Two years ago,” says Kennedy, “we instituted an evaluation at the end of three weeks because we felt we finally had experience enough to make reliable judgements. Before that it was too new to all of us. Actually, since then, we've had only one dropout and that was by mutual agreement.” The man accepted a noneengineering staff assignment within the company.

There is, according to Dudukovic, enormous variety in each group. Participants come from different engineering backgrounds and different Monsanto locations, they're different ages, they've been doing different jobs. “The common denominator of knowledge and skills is very low,” he says, “but the will to learn is tremendous. The combination tests your quality as a teacher thoroughly. You have to be sensitive, patient, compassionate.”

Participants are quite apprehensive to begin with. Some have been out of school for as much as thirty-five years. They have made a commitment to change their professional lives, often quite radically. Many are away from their families. They have no idea what lies in store for them in the classroom, except hard work, or in their careers, except change.

The program is indeed rigorous. Students spend as much as five or six days a week at the University, taking classes, participating in help sessions, working on homework sets. As Dudukovic describes it, they work diligently, easily seventy hours a week. “They work until they get the answer, no matter how long it takes them. If you give them five problems, they do them all, unlike undergraduates who do just what they think is reasonable. Older students consider this a job, and a job has to be done. It can't be done partly; it has to be finished. They are very high achievers.”

For many the computer presents a particularly challenging hurdle. As the students put it, the whole academic environment is oriented to computer use. The analytic techniques available today were not even discussed when they were in college.

Candidates for the program may be self-selected, or they may be tapped by a supervisor. To be considered for the project, prospects must have had good academic records in whatever distant past and a history of achievement at Monsanto. Not every one leaps to the opportunity. Of those who do, nearly all finish the program.

Len Laskowski, a 1979 alumnus of the process and instrumentation option and the youngest to go through it, remembers it as “a great course to be from and hell when you're going through. If they came back and asked me to take another advanced program, I would shudder for all the hard work, but I would do it.”

Laskowski was only five years out of school when Monsanto drafted him for the program. In the first semester, he recalls, they essentially covered what a normal engineering student would get in two years. For example, one course in math was equal to two years of undergraduate math. “They really rolled to get you up to speed, ready to do things that were often entirely new. The calculator became a way of life.

“They got their money's worth, too,” he continued. “Professors worked us very hard, tried to keep us loaded up with as much as we could handle. If you got an A, they'd figure you weren't working hard enough. You were damned if you did, damned if you didn't. We
never got to lay back. It gets tough to grind on those books all day long. It's the Fourth of July weekend and the sun is shining. You've just got to lock yourself up and do the work. One take-home test I spent at least forty hours on, and I was no exception.

“It's hard on family life. Wives never saw their husbands whether they were here in St. Louis or not. In August that year I was working on a couple of papers, buying a house, and getting married. It was hectic.”

It's a discipline for families, too, whether they stay behind or move to St. Louis. “Sometimes I think the time will never end,” said Martha Howell, who stayed in Charleston, West Virginia, this year with sons Stephen and David, ages four and five, while her husband came to St. Louis. “The first week was interminable. But I am more independent now. I've learned to do things that Peter did before, to manage the business end of the house. I'm more self-sufficient, more outgoing than I was.

“The children have managed better than I have,” she continued. “Stephen, the older one, sees himself as the man of the house. But David has put his daddy on his Christmas list for next year.”

Marlys and Gene Grosland opted to move from Soda Springs, Idaho, even though that meant pulling three children out of school in the middle of the year. Their decision was influenced by the experience last year of another Soda Springs couple who, after the birth of their eighth child in February, moved the entire family to St. Louis. “We thought it would be easier for Gene if we were here,” Marlys says. “He would have had to spend so much time traveling otherwise, to get back to Soda Springs every three weeks.” For their family, a year in St. Louis is a bracing change from life in a small town in Idaho. “We've taken in a lot of activities the children didn't even know existed—Six Flags and soccer and nine-year-old Lori is deep in a rich Girl Scout experience. But it is hard to get used to his schedule. We never know when he is coming or going, and when he is home he's either studying or sleeping.”

Even families from St. Louis feel pressure from the program. “I just stay out of Raul's way,” says Emily Clarin. “He's busier now than ever before. We don't go out much at night. But he did that for me when I was studying data processing. We've just changed places.”

The men talked about the program in that narrow corridor of lunch time. For them, the hardest thing has been getting back into the habit of studying, of absorbing information. For everyone, whether their family has moved or stayed, that difficulty is compounded by a change in family life. For those separated from family, even three weeks is a long time to be away, and when you do get home, a weekend is too little time to catch up on the chores. One man repaired three automobiles in one brief visit.

“I turned the program down at first,” says Bob Scholl from Pensacola. “My boys are in their last year of high school. I couldn't see being away. But they talked me out of that.” And in retrospect, he believes his family has benefitted too. He sees his sons becoming more independent, more inclined to take on responsibility.

For Washington University, the decision to initiate a professional development program that is entirely separated from its undergraduate and graduate programs was not easily made. It was to some extent a challenge presented by Francis E. Reese, senior vice president of Monsanto, that was hard to turn down. “Monsanto, who we look to as a good friend of the school, was asking us to undertake something that we are supposed to be experts at—teaching,” says Engineering Dean James M. McKelvey. “We make a little money from it, but primarily, we simply had to be good citizens in our corporate community.”

In the doing, however, other benefits have surfaced. Says Kennedy, “The faculty I associate with feel strongly that they have to be current with the state of the art. This program keeps them on top of how industry is using the stuff they are teaching. They’ve been marvellous about it. In one course, for instance, which is a sort of bridge between bench and lab and industry, we said, ‘Hey, what you are teaching isn't exactly right.’ So they found the best man in the country, a professor at Georgia Tech, and brought him in.” In that instance, everyone's skills were updated.

All participants concur that the year is hard work. The men and one young woman involved—for reasons historical to engineering there have been few women eligible to date—anticipate at the end opportunities for promotion, for more interesting assignments they couldn't have been considered for otherwise. What they like is the sense of possibility it gives, the newness it brings into their professional lives: access to new people both at the University and Monsanto, new areas of information, new avenues of problem solving, new technical skills. They get a long stimulating look at the computer and its potential.

It is for them too an offer they couldn't pass up. It's only a year, they say, a year of work and change, but a year that gives them a chance to try themselves out in new ways, that opens new regions of professional life. It is a year that gives Monsanto highly trained, highly motivated people.

“It's a great opportunity,” says Laskowski. “You think, maybe the company really sees something in me. After all it's not a small investment for them. Maybe they think I have a chance to go somewhere and do something. You come out of it with new confidence and real spirit of teamwork and cooperation.”

“It works,” said Dudukovic. “We think it is worthwhile.”
Valedictions

By Paul Bohlmann

Several years ago, when most of us came to Washington University to pursue our education, we embarked, as students for some eight centuries have, upon a bold enterprise—to seek knowledge, sustenance, and truth in a distinguished community of students and teachers. The symbolic entrance to this University—the magnificent archway in Brookings Hall—beckons all with its inscription: "If you wish to learn, enter. We bid you welcome." Even the inscription on our University's seal asserts the validity of a timeless notion—that there is life-giving force in truth. These are lofty conceptions, to be sure, but they commend themselves to occasions as auspicious as this commencement exercise. And the idea of commencement also lends itself, for today we embark upon yet another enterprise, beginning a life beyond the seclusion of our ivy-covered ivory tower. In that seclusion, however, we have been blessed with myriad opportunities to explore, to investigate, to ponder, and to muse: and, since this is a sentimental occasion, before we leave this community we ought to spend a few moments reflecting upon what we take with us as we graduate. My list of fond memories of Washington University is unique. I realize: the C+ on Norris K. Smith's mid-term examination, the triumph of that first "Aha! I've learned something!" in Max Okenfuss's Enlightenment history class, the sleepless nights spent on a senior thesis and the realization that Ed Weltin's advice for a third revision was really pretty good even if it was keeping me up late. There are also fond personal memories, especially of intimacy and lunacy shared with great friends. But despite the particularity of these recollections, there is in them an element of universality, for when young men and women are graduated from this place with a healthy respect for learning, a desire for increased understanding, a zeal for truth, a sense of humility in the face of our vast ignorance, and a delight in those special people around us—our friends, parents and teachers—who have sustained us and our ideals, then the university has truly succeeded.

In any address such as this, no matter how brief, there is generally—eventually—some theme. I have taken mine from a sonnet written in 1652 by John Milton, which concludes: "They also serve who only stand and wait." This statement, sometimes taken as advocating a passive life, actually urges us to consider the full range of the word "service" about which the poem was written. In the line, "They also serve who only stand and wait," if we stress alternately the "also" and the "only," we find by implication the extolling of great deeds, and we perceive in explicit terms the greatness of lesser works. The varied meanings of the verbs in the sentence also urge us to consider the full range of our responsibilities to service: "to serve" is both to act as a servant and to answer some purpose, "to stand" is both to remain steadfast, as in a cause, and to espouse or maintain a position with regard to a person or issue, and "to wait" is both to stay or rest in patient expectation and to attend to the needs of others.

Having accepted that we ought to serve and considering the dimensions of how we might go about it, another question awaits us: whom shall we serve? We have only to look around us today to realize that we find significance not so much in ourselves as in the community of people in which we have shared. If we have learned anything here, we ought to recognize in our responsibilities as educated persons the truth of our compassionate belonging to a greater human community. We ought also to recognize that much is required of us to whom much has been given. And, if we take Milton to heart, we ought to recognize that in our standing and waiting is a full dimension of service to the greater community, whether in supporting the international peace effort or alleviating the plight of our urban poor, or, more simply but with equal significance, in adhering to a marriage vow or assisting an elderly person across the street. In every point along this spectrum of service, and in whatever magnitude we serve, shines brilliantly some goodness and some measure of truth.

Now, as we graduate, we again turn to the archway in Brookings Hall, but this time, let us look upward and outward. As we face out from within the University, we find surrounding the clock an inscription which translates simply, "The hours slip away; works remain." With that pronouncement, the arch becomes a symbolic yoke of responsibility for all who are graduated here. What, then, ought we to take with us on this commencement? In accepting that yoke, I would suggest, we ought to preserve within ourselves the resolution to stand in truth, the patience to wait in humility, and the overriding compassion to serve in charity. In this sublime commitment, we are limited only by our ideals, our altruism, and ultimately by our love.
Two liberal arts seniors delivered addresses at Washington University’s commencement activities. John Dacey spoke at the Eliot Honors convocation on May 20, and Paul Bohlmann addressed graduates, families, and friends gathered on May 21 in Brookings Quadrangle for degree-granting ceremonies.

By John Dacey

Tomorrow we celebrate a transformation that we, as students, have undergone at Washington University. We are now, by most standards, educated people, with the paper to prove it. But clearly, our education has been far more than is represented by the listings of courses on our transcripts. We have learned, our teachers hope, how to think. Exposure to new perspectives now enables us to make comparative evaluations and critical judgements.

For four years we have been confronted with the value systems of our roommates, classmates, and professors, some radically different from our own. We have examined much of what we earlier took for granted. Even those ideas we have retained have been altered, given new validity by critical assessment.

A conceivable outcome is a new tolerance for differing ideas and different people. Poet John Keats referred to this process of enlightenment as a “negative capability”: an openness to the world, toleration in a rich and emphatically positive way. I understand it to mean the ability to remain relaxed when cast adrift, confident in one’s own orientation, at ease with suspended judgment.

Recognizing this negative capability as an ideal, we must look to see when we do not attain it. At times, our criticism deteriorates into cynicism. When we lose perspective, we sometimes do more to close our minds than to open them. Caught in the proper mood, we hone our ability to disparage, belittling that which dares to stand tall before us. We fear being inspired: our skepticism cautions us from dreaming.

It is true that we live in a world where generosity is scarce, and idealism is battered. We have learned it is more of a risk to smile than to sneer. So too, we have found it easier to bludgeon an idea than to defend it, to act pragmatically than nobly. Not that nobility isn’t present, simply its evidence is rare.

Why do we act this way? I think most of us find at the heart of the matter a break in our confidence, an uncertainty of who we are and where we fit. It is incredible that as young as we are, we expect to hold such a firm grasp on the world. I sense in myself and friends a frustration that, in spite of all of our schooling, we remain ignorant of much within our fields, oblivious to most beyond them. Returning to Keats, we must strive to be “capable of being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason.” As we leave, we must learn to believe in ourselves and to be comfortable with our limitations.

A good start would be believing in Washington University, a frequent target of our cynicism. Now might be a good time to step back and assess our experiences with this school. I cannot imagine a student here seeking a challenge and not finding it, seeking help and not receiving it, seeking to be educated and leaving without being overwhelmed at how much has been learned. I need not remind anyone that the University is less than perfect, but think the time has come to stop using it to mean an unmistakable and rare place.

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Let me recount a scene last fall in this Chapel. In front of a crowd nearly as large as this, a man was ending an address by singing “The Impossible Dream” from Man of La Mancha. The apparent triteness amazed me. Didn’t this man realize he was speaking to college students? In my next thought I was struck by the reality of the situation. The man was Walter Fauntroy, congressman from the District of Columbia and chairman of the National Black Caucus. Thirty years ago, he may not have been admitted to this University. Twenty years ago, he was marching with Dr. King to sit on the front of a bus. Today his strength helps to lead the country. His dreams may not yet be fulfilled, but his attainments must have once seemed impossible. Maybe it is time we unfeather ourselves from the chains of cynicism. Let us leave Washington University with real facts, real cases, and real education. We must challenge the idea that there is little left worth believing in.

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In Washington University's master's degree program for writers, aspiring authors of fiction and poetry find time, space, and place to practice their craft within a community cultured for creative evolution.

By Roger Hahn

On a steamy night in July 1975, most of the established writers associated with Washington University met at the home of Professor William Gass to undertake a plan upon which they thought they agreed. They gathered to give form to the idea of establishing a writers' program at the University. They had often talked of it among themselves: outsiders frequently assumed that a community of such talent would long before have fostered a collaborative program. It had not, but surely they were ready now.

Perhaps so, but not without trauma. By evening's end, several of the participants no longer considered themselves on speaking terms with their colleagues. Tempers flared, oaths were muttered. As the host recalls not with a wry grin, "There was a lot of heat that night."

Jarvis Thurston and his wife, Mona Van Duyn, the spiritual parents of the movement by virtue of their nurture of creative writers through their little magazine Perspective, turned to the task of reconstitution. Says Thurston, "The harmony and supportiveness of the group had scattered like dropped mercury. It took several weeks for us to roll ourselves back together, pushing each droplet patiently with a tentative finger."

What had caused such discord among the group, many of whom were, and are, good friends, was nothing less than the fundamental question they had come together to consider: what constitutes the proper education of a writer?

Esoteric as that question might seem, its importance has increased as writing programs associated with universities and colleges have, as Stanley Elkin says, "proliferated magically." And looking at the larger canvas, at these programs as pieces of a patchwork called the humanities, Gass feels that writing programs have become one of the "strongest influences in the humanities throughout the country."

If Washington University did not have a writers' program, it had writers enough to put forth respected, though divergent, opinions on how best to educate that species. Nearly a dozen nationally known writers constituted the University's writing community, an accumulation that had happened piece-meal during the 1960s.

Each new arrival not only added to the whole by one (or sometimes two because husband and wife followed the same vocation), but had increased the group's magnetic power severalfold. But the very beginning was earlier. Thurston and Van Duyn came to the University in 1950—he as a faculty member in English and she as a teacher of evening classes. They brought with them the fledgling literary magazine they had been publishing at the University of Kentucky. And here they continued, though without official support, to dedicate Perspective to publishing the work of unknown young writers. It gave audience to many, including Stanley Elkin and Donald Finkel, who, encouraged by the Thurstons' presence, joined the faculty of the English department. Here too then were poet Constance Urdang, Finkel's wife, and novelist Albert Lebowitz, husband of English professor Naomi Lebowitz.

By the time John Morris—now director of the program but then a just-published poet—Howard Nemerov and William

Donald Finkel
Poet
Poet in Residence

Constance Urdang
Poet
Coordinator of the Writers' Program
Gass joined the faculty, the presence of recognized writers on and around campus was enough to cause an observer to call it "one of the largest, informal writers' colonies on an American campus." Members of that group and friends and colleagues in the department of English sensed that it would not only be possible, but fruitful, to formalize the teaching of writing in a graduate-level program. The plan was to shelter it within the department of English as a master's degree program. It would, everyone agreed, focus on the workshop method originated by the progenitor of all university-based creative writing programs—the Iowa Writer's Workshop. Finkel, Thurston, Van Duyn, and Urdang were all Iowa alumni. That program, whose fame has been celebrated most recently by novelist John Irving, an Iowa graduate, has existed since the early 1930s. Over the years, it has produced a surprising number of influential graduates, many of whom teach and direct other programs. (There are by now some 300 college- and university-based writing programs of one sort or another.)

If the workshops were to be central to the Washington University program, what should be the makeup of the rest of the curriculum? There was the rub that became tender in the give and take of that warm summer evening seven years ago.

The program that evolved represents a marriage between a highly structured program of study in languages and the humanities and a loosely planned curriculum that would, ideally, serve a writer's individual needs. On one hand were those who favored a severely disciplined course of study with no electives. On the other were those who said that while such a program might conceivably produce writers, there was no guarantee that it would do so. And besides, they added convincingly, none of them knew any writers who learned to write through such an education. Obviously, they said, writers learn to write by writing and writing and writing. And by reading, said another voice. Ah, yes, agreed all eventually, by writing and by reading. And so they created a program.

At the heart of it are the writing workshops, one in poetry and one in fiction. These are weekly gatherings at which students work is read and discussed. The workshops are led by a writer on the faculty, and student participation is obligatory. For the student writers, says Urdang, coordinator of the program, the workshop may be a mixed blessing. It can provide a stimulating atmosphere and audience, but to some it presents a scrutiny awesome and intimidating.

The workshop, however, is only part of the Washington University program. In addition, students are required to attend a weekly colloquium, where professional writers—including last year John Irving, May Swenson, Robert Pinsky, Lamar Herrin, Lisel Mueller and Lore Segal—may read or speak informally on some aspect of writing and publishing, and students have the opportunity to read from their work. These two courses constitute half of the curriculum. Academic or studio courses taken in any department of the University satisfy the remaining credit requirement. These courses are intended to broaden the students' experience in a field of concentration outside their own literary concerns.

This curriculum, representing the founders' compromise, distinguishes the Writers' Program at Washington University from its counterparts elsewhere. The program exists within the department of English. The two-year course of study earns a master's degree, and requires, in addition to forty-eight credit hours from the curriculum of the Graduate School of Arts and Sciences, completion of a thesis that must consist of a book-length collection of poems or short stories or a novel.

Once the question of form had been settled, other concerns remained. What could a writing program actually do
for the apprentice writers? How would it affect the University as a whole? Both of those have been answered by time and experience.

"The presence of writing students has enlivened my classes," reports Naomi Lebowitz, professor of English. "The writing students are less inhibited. They ask more direct questions. However, there are gaps in their reading background compared with other English department graduate students, and it's difficult to depend on critical consistency in their judgments. A doctoral candidate might read Proust, for instance, to determine which traditions he represents, while a writing program student might be reading Proust to learn about his or her own writing. But altogether, I'd say, it's a healthy infusion."

"The Writers' Program," says Professor Elkin, "provides students with three things: deadlines, critical intelligence, and a community, so they can feel that they are not the only people on the face of the earth doing this."

To Professor Daniel Shea, chairman of the English department, one of the most important aspects of the program is the opportunity for apprentices to observe masters. Beginning writers can mingle with established writers, see how they go about their work, and discuss with them the problems, pitfalls, and rewards of a writing career. "In that kind of atmosphere," he says, "students learn the differences between fantasy and a realistic ambition."

Some writers who teach, like Professor Finkel, stress the importance of one-to-one relationships between student and teacher as part of the writing community. "The workshop becomes almost secondary," he says.

Professor Gass, bringing the viewpoint of one educated without benefit of a writing program, says, "In isolation, there is a lot of spiritual energy spent in seeing oneself as a writer. And because of the immense variations in a writer's career, it takes character to survive. In addition to being talented, you have to be committed to the work, you have to have psychic involvement, determination, ambition. A writing program finally does establish a community which can help in that regard. It isn't Paris and the Left Bank, but it's a place where people will accept you for what you are essentially."

A writing program is "a cocoon," says Albert Lebowitz, one of those involved in formulating the program. "There is something sustaining about being around other writers. In the best sense, a writing program can be seen as a negative process, it can keep you from taking unnecessary steps. And some people absolutely need that kind of an environment to grow. It can be a very good place to come to rest during a critical period in a writer's life."

Students in the program agree that the greatest benefit they derive is having the time to concentrate on their writing. They have abandoned other pursuits—sometimes to the extent of living almost hand to mouth—to plunge into the experience. "It took me a year just to settle on an approach to writing fiction," says Diana Marre, a student currently completing her first novel. For her, the time and space provides "a gorgeous opportunity" to work independently on writing projects.

"The Writers' Program gave me a real sense of what the life of a writer is like," says a recent graduate Robin Mack, a St. Louis native whose thesis, a collection of poems, is now making the rounds of East Coast publishers. Mack compares the apprenticeship of a writer to that of a jazz musician. "When you're just starting out you want to be where the good musicians are," she says, "and writing programs are where you have the chance to establish that first sense of having a peer group. It's very important."

Luke Whisnant has recently had a short story accepted by Esquire magazine. He credits the Writers' Program with supplying an infusion of energy to the efforts of young writers. "You're in an atmosphere where you feel a lot is going
on, and you’re not just working in a vacuum. You have contact with people
who are sympathetic to what you want
to write, and in the workshop you can
draw on a diversity of response to your
writing that isn’t possible if there are
only two or three people to whom you
show your work.”

Most students seem to feel the inclu­sion in a community of writers essential
to their time of apprenticeship, but
finally it appears that only constant prac­tice allows the young writer to mature.

“You can’t teach people how to
become poets or writers of fiction,”
Constance Urdang says, “but people
learn how to write by writing. You may
not learn how to write by having your
work criticized, but it does give you a
perspective on your work and may lead
you to look at it more objectively. Then,
perhaps, you can make it do what you
wanted it to do in the first place.”

“Most people,” says Professor Finkel,
“find quite simply that this program is
a place where writing makes sense.”

According to Professor Shea, the
influx of writing students has
changed considerably what
happens in the English department. At
least half of the entering graduate
students are enrolled in the Writers’
Program, says Shea, and as the program
has grown so has the quality of appli­
cants. The demand has been strong
enough to create the need for another
faculty appointment in fiction writing,
to be filled this year. Part-time faculty
will round out a growing curriculum.
Shannon Ravenel will bring her experi­ence as editor of the Penguin annual.
Best American Short Stories, to a
course in advanced fiction writing.
Pamela White Hadas, poet and author
of a book on Marianne Moore, will
teach a course on modern poetry next
spring in the same English department
where she earned B.A., M.A., and
Ph.D. degrees. But Shea stresses that
the relatively small size of the program
—currently twenty-four students—is
one of its strong points. “We are always
going to prefer excellence to numbers.
In a medium-sized department very
good students can learn from each
other as well as from the faculty.”

Even as the Writers’ Program was
being formed, talented students were
attracted to the English department by
its poets and novelists. Lisa Zeidner’s
Customs (1981) earned her a place on
the Rutgers-Camden faculty shortly
after she left Washington University.
Jonathan Valin’s Cincinnati detective
Harry Stoner, a favorite of St. Louis
radio personality Jack Carney, is now
appearing in his third mystery since
The Lime Pit (1980), written while Valin
was still a graduate student here. And
Writers’ Program students have seen
their work published in such exclusive
quarters as the American Poetry Review,
the New England Review, the Sewanee
Review, Epoch, Esquire, and a dozen
other literary journals.

Urdang, however, feels that may not
be the point. Must the thousands of
musicians graduating each year from
conservatories turn out to be latter-day
Beethovens, or every art school graduate
become a professional artist? Music, art,
and literature are the enriching texture
of everyday life. To give literary form
to one’s consciousness of life may be
enough.

If the University’s program nurtures
the serious beginning writer by allow­ing
time and giving community, that is
fulfillment. It then becomes a seminary
of the literary arts, a place of seeding
and germination, where the University’s
recognized writers share what they so
cherish among themselves.

Roger Hahn is a second-year student in the
Writers’ Program.
THE PUTNAM

In 1977 at Washington University, we talked of “The William Lowell Putnam Mathematical Competition, this country’s most prestigious undergraduate mathematics competition.” In 1979, we spoke of “The William Lowell Putnam Mathematical Competition.” By 1982, it has become “The Putnam.”

On the first Saturday in December within the mathematics departments of nearly 350 colleges and universities across the United States and Canada, some 2,000 students report before 9 a.m. for the most grueling mathematics test they are ever likely to undertake. There are twelve problems on the William Lowell Putnam Mathematical Competition. Each carries ten points for a possible score of 120. At least one-half of those students will get 0, two-thirds will get scores of 0, 1, and 2.

“You have to do something brilliant to get two points,” says Carl M. Bender, professor of physics, who with Edward N. Wilson, associate professor of mathematics, coaches Washington University’s Putnam contenders. “There is no hope of finishing. You could spend three hours on one problem.”

Washington University’s team—the three competitors designated by the University to make up its team—won the 1981 Putnam. It was the second year running and the third time in six years. In that time, the University’s team has consistently placed in the top ten: 1976, second; 1977, first; 1978, second; 1979, tenth; 1980, first; 1981, first.

The team score is the sum of the ranking of the three designated students. Coaches must therefore put their team stake behind the students they believe will do best. “In 1979, we guessed wrong,” says Wilson. “This year we really hit the jackpot. All three placed in the top fifteen, and we won with a team score of 29.5. That’s unheard of. Normally, a team score of between 70 and 80 stands a good chance to win. For example, we won last year with a team score of 73.”

The team ranking in the Putnam, now in its forty-second year, is the stuff of the dreams of college presidents and admissions and public relations departments. But the individual rankings and scores warm the hearts of deans, department chairpersons, faculty, and coaches. Of the twenty-one Washington University undergraduates who took the Putnam last December, seven finished in the top 125; at the other extreme, seven were among the thousand students who got a score of zero.

It is not, say coaches and contenders, that any of these twenty-one or of the 2,043 national competitors are not outstanding mathematics students. They represent the top 2.5 percent of college mathematics undergraduates nationally. Some of it is luck—do you find something or some things you’re particularly strong in among the twelve possibilities—but the Putnam is so tough, it is a separator. Its scorers represent the crème de la crème.

How tough is it?

It is so tough that this year the top student got 97, the second got 72, and the third got 64, the next ten ranged between 60 and 50. A student with the score of 30 ranked fifty-second among the 2,043, and a score of 13 out of an impossible 120 landed its bearer in the top 10 percent.

It is so tough that teams from the University of Chicago, the University of California at Berkeley, and Massachusetts Institute of Technology did not make the top ten this year.

It is so tough, say Bender and Wilson, that as mathematicians every once in a great while “you think of a problem that would be good enough for the Putnam.”

It is so tough that though you begin with students of uncommon native ability (almost all of Washington University’s team members have come to the University through its Compton Fellowship competition), that is no guarantee of a success on the Putnam.

Starting in October, Washington University coaches invite the students who would like to compete or who they would like to compete to begin two-hour, Friday evening review sessions. Wilson and Bender use the problems from past Putnams. (The exam is made up fresh
Students who scored in the top 125 of last winter's William Lowell Putnam competition and their coaches. From left, student and rank are: Robert Dolezal, 124th; physics professor Carl Bender; Ed Shpiz, 14th; Richard Stong, 8th; Karl Narveson, 52nd; Ronald Greenberg, 124th; Kevin Keating, 7th; and mathematics professor Edward Wilson. Bard Bloom is not pictured.

Coaches say these problems are roughly on three levels in difficulty. "I could probably knock the easy ones off in an hour," says Bender. "The number two's might take an hour and a half; the three's most people can't do; those who can take two to three hours."

"The Compton program has brought us absolutely great students," says Wilson. "For a while, Carl and I weren't sure that our coaching was necessary. But the practice sessions do help; they may add five points to an individual's raw score here and there and that might translate into the difference between first place and eighth for the team."

The six-hour exam is divided equally into morning and afternoon sessions. Students are equipped only with pencils; no books, no calculators.

"Probably the best measure of the six-year achievement is the number of students who have placed in the top 100," says Wilson. "Harvard has had 84; Princeton, 59; M.I.T., 37; Cal Tech, 36; Washington University, 30; University of Waterloo (Waterloo, Ontario), 28; and Case Western Reserve, 21. That Harvard and Princeton dominate these totals is no surprise to anyone in mathematics. What is amazing is that we are in the middle of the next five."

As the top ball rolls down from the position shown, at what point does it lose contact with the lower ball?

The areas of the three cylinders meet in the middle and are mutually perpendicular. If the radius of each cylinder is 1, what is the volume of the region common to all three?

Finally, how tough is the Putnam? Here are two problems similar to those on previous tests. Bender rates them both "ones" on his easy-to-difficult scale.

That tough!
All through the winter they worked, three women, all literary, plagiarizing a format, violating a copyright, compiling a festschrift. But it had to be just right, so perfect a copy that it became the product they were copying. Their success was reflected in the face of Jarvis Thurston, professor of English and former long-time head of the department now retiring. At a party in his honor in April, Thurston was handed an envelope which he opened to find a copy of *Perspective*, the quarterly of modern literature which he and his wife, Mona Van Duyn, had put out for many years. His look was quizzical. Only as he opened to page one to read its contents did he realize that it was a new issue contributed to by many whom he had helped and lovingly compiled into a Spring 1982 edition by Mary Gallatin, Naomi Lebowitz, and Nancy Schapiro.

Like other issues, the new edition contains essays, poetry, fiction, criticism. Unlike other issues, it is filled with the work of well-established writers. Since 1947, Thurston and Van Duyn have dedicated their handiwork to showcasing promising literary lights. In this issue, those authors with whom Thurston has been most closely associated return the compliment. Contributors are Alice Bloom, Howard Nemérov, Tom Garst, Constance Urdang, Donald Finkel, Stanley Elkin, Terrence Des Pres, Pamela White Hadas, Albert Lebowitz, William Gass, John Morris, Ruby Cohn, Jacqueline Hoefer, John Gardner, and Charles O. Hartman. The issue is available from the English department at a cost of $2. We feel sure that Jarvis would be willing to autograph a copy for alumni who request that.

Any spring brings to campus a flurry of excitement associated with announcements of national honors won by faculty and students. This spring, however, brought one of special note: Ellen Marie Pint, a diminutive (one must resist the temptation to pun on her name) senior from Akron, Ohio, became Washington University’s first woman Rhodes Scholar. The scholarships were first awarded to women in 1976.

Excerpts from Pint’s essay to the Rhodes selection committee afford some interesting views of the University’s programs and a hint of the sparkle and stamina that must have attracted the committee. Of her academic life, she wrote: “After the slow pace of high school, the transition to Washington University was an exciting academic adventure for me. I was like a child turned loose in a candy store; I hardly knew which enticing nugget to reach for first.

“Instead of succumbing to the temptation of choosing courses at random, I disciplined myself by enrolling in a special program entitled “Quantitative Methods and the Social Sciences.” This Focus Program consisted of integrated courses in calculus, statistics, and political science. The program served to create a sense of direction during my first year at college and to teach me to find the underlying connections between the disparate topics I studied in succeeding years.”

And of the extracurricular achievement that the Rhodes committee so values she said: “My extracurricular activities have had an effect on my personal development. As a child I was somewhat rotund and inept at athletic activity, and one of my greatest anxieties was being the last person chosen for the day’s softball team in gym class. I consoled myself with mental activities, preferring reading to sports. By the time I was fifteen, I had slimmed down considerably, but my faith in my athletic ability had not increased.

“In the second half of my freshman year at college, I decided to attempt to establish a sense of athletic dignity by learning to fence—a sport at which I had not yet failed. Much to my astonishment, I found that I had the necessary coordination to become a fairly good fencer. I shortly joined the fencing club and became a member of the team as well. Fencing particularly appeals to me because it is as much a sport of the mind as of the body: the ability to outwit one’s opponent is as important as one’s relative physical skill.” Pint was, in fact, captain of the women’s fencing team and a member of *Student Life’s* editorial staff.

The mail brought one comment on the last issue of the magazine so delightful that it must be shared. A 1952 alumna wrote saying, “I’ve seen many outstanding ‘cover girls’ over the years, but none with the beauty and appeal of Adele Starbird.”

Since the Search award of the University’s William Greenleaf Eliot Society was inaugurated in 1968, each year it has honored one individual for significant contribution to Washington University. This year’s recipient was Oliver H. Lowry, M.D., Ph.D., whose contributions run as a minor theme through the article in this issue on his student and successor, Phil Needleman.

“Mindpower” (opposite page) is a campaign to increase awareness of higher education’s potential as a source of the energy which will solve the problems confronting our society. Its purpose is to remind all that in mindpower is a more potent source of energy than in nuclear, solar, wind, water, oil, coal, or gas. Developed and used in 1981 by the Council for the Advancement and Support of Education and its affiliates, CASE will go national with its campaign from October 3 to 11, 1982.

*D.W.*
MAKE HIGHER EDUCATION YOUR PRIORITY
Mindpower: use it, develop it, invest in it, vote for it, support it!