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The Port of Seattle is pleased to support students in the University of Washington’s 2003 GEAR UP Summer Institute.

GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) is a national effort to help low-income middle and high school students plan for and succeed in higher education. Students learn from university faculty, live in dormitories, engage in career and college planning, and team up with UW undergraduates who serve as mentors and help demystify college life.

Today’s students, who will be tomorrow’s leaders, benefit from programs like this one - engendering greater understanding of our developing role as citizens of the world.

Photo Credit: Karen Orders
Full Speed Ahead

Struggling with budget limits, the University of Washington continues to expand its commitment to research and its relationship with the business community while preparing for the next wave in learning.

UNDER the tranquility of its wooded grounds, the University of Washington’s Seattle campus carries a coiled charge that has even affected its buildings.

Sleek, upstart brick buildings nudge its grave gothic squares. The sea-foam glass of the new Gates Law School swells against the venerable spires of Denny Hall. As construction that includes a new surgical pavilion, intramural facilities, and updates to its graduate library clears its scaffolding, the UW feels as if it is readying for its next forward burst.

Through private gifts – such as the $70 million pledged by the Gates Foundation for a new genome research facility – the business community has shown that it sees the UW as a sound investment. Over 11,500 degrees are earned here each year, fueling the workforce with doctors, nurses, scientists, engineers, economists, artists, and more.

As one of the nation’s most vital research universities (with this year’s receipt of grants approaching a high of $1 billion), it fosters the growth of new industries. According to a recent UW study, nearly 100 new companies in the last decade were formed by the transfer of UW technology to private enterprise.

That trend is likely to continue. “Our research generation,” said Interim UW President Lee Huntsman, “is just on fire.”

Huntsman is an imposingly tall but elegantly soft-spoken man. His gangling frame sinks into his office armchair. Suits his experience as Provost, the institution’s financial officer, he uses the pragmatic vocabulary of business. The many volumes authored by UW professors of history, philosophy, and physics that loom at his side give strong credence to his talk of the UW’s “multiple product lines” and how it “operates in several competitive arenas.” Like any corporate executive in the global marketplace, Huntsman insisted, “we must be as agile as we can be.”

A TIME OF TRANSITION

Like the state it serves, the UW is in transition. Budget woes have deepened the state’s chronic under-funding of its colleges, forcing tuition hikes such as last year’s seven percent hike for residents, and spurring further quests for efficiencies. Since the departure of his predecessor, Richard McCormick, who left to lead Rutgers one year ago, Huntsman has worked to preserve the momentum.

He is dogged in his pursuit of greater state funds that pay for teaching students. Although the state continues to allocate more dollars to the UW ($414 million in 2003), it has also raised enrollment levels. State funding per full-time student, in constant dollars, has declined nearly 16 percent from levels ten years ago. Huntsman blames a faulty process. “We’ve been
shifting the costs without talking about it enough.”
Huntsman equally credits the importance of the humanities disciplines at the UW, where, in subjects like literature, history, and social science students are taught the critical thinking skills that will be just as necessary to their careers. The varied arts programs at the UW, in drama, visual arts, and music, also produce graduates that are both creators and consumers of culture.

Within a region that boasts a wealth of knowledge-driven institutions such as the Fred Hutchinson Cancer Research Center, Pacific Northwest National Laboratory, and the burgeoning biotechnology sector, Huntsman sees the UW as a "thought leader" that can, through all its academic disciplines, enrich both the economy and quality of life.

Polished and ready to roll, the UW is poised for the next round of revolution in knowledge – to help create it through research, to supply it with skilled graduates, and finally to benefit from the resulting growth.

Challenges abound but, soothes Huntsman, “It hasn’t slowed us down any.”

BIG-HIT BUSINESS
When you think of the University of Washington, perhaps you should think of yeast. What does that mean exactly? Well, it might mean the leavening of the nearly 40,000 young minds that cross its campuses each year. But more accurately, it refers to the unexpected benefits of inquiry.

Despite its lack of glamour, a modest piece of professorial research on the behavior of polypeptides in yeast has turned out to be UW’s largest producer of royalty revenue. The exclusive license to produce recombinant proteins granted to pharmaceutical company Genentech generated $5.3 million in royalties in the fiscal year 2002 alone, far outdistancing income from all other patents.

The current vice provost of UW’s Office of Intellectual Property and Technology Transfer (OIPTT), Jim Severson, likes to explain how you can never tell what is going to come from simple curiosity. "It’s a big-hit business," Severson explains, noting that a typical university receives, by his rough estimate, 95 percent of its revenue from licensing technologies from as little as 5 percent of its portfolio of patents.

RESEARCH CENTER
UW is a leviathan of research in the Northwest, covering some of the most demanding disciplines in medicine, science, and computing.

Every year since 1975, it has received more money in federal grants than any other public university. That includes research funds from agencies like the National Institutes of Health, the National Science Foundation, and the Food and Drug Administration.

In the list of top 10 recipients that includes both public and private institutions, UW sits at number two behind Johns Hopkins and is the only school located in the Northwest region. In the fiscal year 2003, sponsored research at UW totaled an all-time high of about $920 million, approximately $600 million of which was from federal sources.

Universities are required under the Bayh-Dole Act of 1980 to patent all inventions arising from federally supported research and either license those patents to a commercial enterprise or turn the inventions over to the government.

Today, often working through the Washington Research Foundation, the OIPTT manages more than 450 revenue-producing agreements with private companies. In the fiscal year 2002, licensing revenues totaled more than $17 million.

Severson acknowledges that while that may not seem like a strong return for UW, the school doesn’t measure all of its success in licensing dollars.

For example, there are some strong performers, such as Florida State University’s method to synthesize Taxol, which earns the school as much as $80 million a year. But Severson notes that everything else in FSU’s portfolio earns less than $1 million, as do six out of the UW’s top 10 revenue-generators.

More important, he says, "we have to think a fair bit about what creates the broadest use and the best public benefit
There are many boundaries in our world. Education enables us to cross them.

Our community of students, faculty and staff are engaged in the relentless pursuit of knowledge—knowledge that transcends the boundaries of life.
from inventions that are created with federal dollars.” Of the inventions the UW holds on behalf of the state, he emphasizes that the school is asked to be “good stewards of those assets.”

TECHNOLOGY TRANSFER

The innovations Severson and his staff of 50 manage include genome research, newly discovered molecules, electrical mechanisms, software, and also new forestry and fishery approaches. The challenge is to smooth the process of licensing them to private enterprises. For the UW, however, that is not always as easy as it might seem.

“Businesses often come to the university thinking that it’s like dealing with another business,” Severson explains. “We’re expected to act in a businesslike way, but there are certain constraints we’re under because we are an academic institution.”

Companies doing a deal with UW discover that the kind of rigid confidentiality agreements that are commonplace between for-profit corporations are usually impossible. As a state-funded agency, UW is subject to public records laws and any citizen can request and receive copies of documents.

Moreover, UW vigorously guards the rights of faculty to publish the results of their work.

“That can be critical,” Severson says. “Publication is what gets our researchers promoted, tenured, and gets our postdoctoral and graduate students their jobs. That’s their product.”

Although these constraints require companies to adjust, Severson says that his office is usually able to work through the issues with a for-profit business. However, the speed bumps within OIPTT itself are far more foreboding.

Since his arrival less than a year ago from Cornell University, Severson has had to confront and improve the reputation of an office that had undergone several organizational shifts and suffered from high turnover. Technology transfer (and not just at the UW) has earned a reputation for being a confusing road for even the most academically attuned companies to navigate.

Severson plans to sweep away many of those cobwebs, making it easier for businesses to navigate their way through the labyrinthine collection of departments and colleges.

“Ideally, companies should always know who they should be talking to within the institution,” he says.

He recently recruited a new director for the Office of Technology Licensing, and plans to add staff to make the office more responsive and customer-focused.

Despite the obstacles, the UW’s technology transfer programs are beginning to blossom into an impressive portfolio of royalties and equity, as more companies start to release products based on licensed technology into the market. By taking a look at a few, it’s possible to see how the process really works—and how it doesn’t.

BIOTECH SUCCESS

Richard Daifuku, president and CEO of Redmond-based Koronis Pharmaceuticals, became aware of UW’s patented technology that demonstrated how a virus’ high rate of mutation could be used against itself.

He and his partners recognized its promise if it could be implemented in a drug. Therefore, Koronis was founded in 1998, shortly after the licensing deal with the UW was inked.

Now, after an intense period of development, Koronis expects to begin clinical trials on an antiviral drug that will help bolster the compromised immune systems of people with HIV.

In part, it was the credibility of the university that helped Daifuku raise the initial $8 million to develop a drug. And access to the university’s patents, as well as its researchers, gave Koronis a solid head start.

“We started [our development] in earnest in January 2001, but here we are going into clinical trials in early 2004,” Daifuku says. “We’ve come a long way from virtually nothing.”

The most important thing Teranode bought through UW technology transfer is time, says company CEO Joseph Duncan.

Teranode’s offerings, which help biotech labs be more productive, are based on two groundbreaking UW technologies from the computer science and bioengineering departments: Labscape, a software laboratory assistant that helps researchers gather, organize, and analyze data; and JSim, a mathematical modeler for biological systems.

The funding sources for the research included the National Science Foundation and National Institutes of Health, as well as private grants from Intel.

NEXT-GENERATION ULTRASOUND

David Perozek, chairman and president of Seattle’s Therus Corp., notes that the technology licensed from UW is only one piece that makes up its ultrasound product. Yet it’s a vital one—the result of a substantial research effort in remote acoustic hemostasis, a process that uses sound waves to seal punctured blood vessels.

Therus’ product is suited for use by heart surgeons, to reduce the amount of arterial blood loss in the more than 7 million procedures done each year. The noninvasive technology will reduce the likelihood of surgical complications, including the risk of infection. The company’s SoundSeal device is completing clinical trials this year.

It took Therus two years to complete the needed set of agreements, but Perozek feels that the outcome was very positive and the experience was in many ways better than it might have been with another university.

Perozek confirms that inability to secure confidentiality between a university and a corporation makes it difficult to exchange information.

“Their mission is to generate and disseminate new knowledge. Our mission is to exploit new knowledge,” Perozek says. Because of that cultural gap “we’re restrained from being able to share information with the university as much as we would like,” he adds.
If you had cancer, where would you go?

The Seattle Cancer Care Alliance (SCCA) is a patient-care collaboration of three of the world’s leading cancer organizations—Fred Hutchinson Cancer Research Center, UW Medicine and Children’s Hospital and Regional Medical Center.

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Even with its challenges, Perozek would like to see the opportunities for technology transfer expand. “The university is a terrific resource, an absolute jewel in the state of Washington,” he states. “They should, in my view, aggressively investigate what benefits there are for jobs and industry.”

Both Perozek and Eichinger are encouraged by recent changes at OIPTT. Even so, the pair would like to see an expanded office with more staff and more authority to make decisions on behalf of the university, to promote speed and predictability in the licensing process.

“The proof of the pudding,” Perozek says, “is whether companies like ours can push toward their own success.”

STALKING THE NEXT BIG THING

Of all the departments that the UW comprises, the Computer Science and Engineering (CS&E) Department is among the most strongly connected to the region’s business community.

Its faculty, including Ed Lazowska, the Gates Chair professor of the program, often consult for area companies such as Microsoft or Madrona Capital, and in some businesses, such as Bsquare or Intel Research, as many as half of the employees might be UW graduates.

In recent years, several members of the department’s faculty have straddled the worlds of academia and enterprise themselves, taking leaves of absence to lead companies of their own.

Most notably, associate professor Oren Etzioni took a leave of absence to launch Netbot, a company that used innovative Internet search technology called MetaCrawler that Etzioni had developed as part of his UW research.

More recently, Chris Diorio, another professor in the department, has joined his former Cal Tech thesis adviser in heading Impinj, an integrated circuits company founded in Seattle’s Fremont neighborhood with $30 million in local venture capital.

Ultimately, the students benefit from the real-world experience of their faculty, who return to the department with broader understanding and the ability to expand the program by teaching courses in entrepreneurship.

Business leaders have in turn recognized the department’s value through substantial donations, including $42 million to build the new Paul G. Allen Center. The fact that most of the cost was borne by private donors is shown by the names adorning its spaces: The state-of-the-art facility encompasses the Charles Simonyi Graphics and Imaging Laboratory, the Alberg Terrace, the Bill and Melinda Gates Commons, and the Jaech Gallery.

LOOKING TO THE FUTURE

Most of the department’s technology research, Lazowska takes pains to point out, looks at least 10 years ahead, often with no idea how or if it will turn into anything practical.

Predictions are doomed to fail, but Lazowska notes the technologies that have had the biggest impact have nearly always come out of publicly funded universities.

The Internet, of course, grew out of Arpanet, whose development UW had been a contributor to since 1981. The Web browser was developed at the University of Illinois, and the development of public-key cryptography, a fundamental component of e-commerce, has benefited from groundbreaking work at the University of California at Berkeley.

“Every place in the country where an innovation center is taking hold, it’s where a university has a presence,” Lazowska reminds. “There’s something going on there.”

UNIVERSITY REPORT

Ed Lazowska, the Gates Chair professor for the Computer Science and Engineering Department, has helped make the university’s computer science research program among the finest in the nation.

This is the day we all got to forget I was sick.

This is the day we discovered the ocean.

And I learned jellyfish aren’t made of jelly.

And we laughed so hard we swallowed the sea.

DAN LAKEWICK

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**A second opinion**

Who ever dreamed there’d be a first?  
Life gets put on hold.  
Denial collides with reality.  
Sleep is not something that will come easily.  
What now? You want to know.  
You don’t want to know.  
You hope you are in good hands.  
Actually, you do more than hope.
CHANCELLOR Warren W. Buck confesses that not everyone is aware of the University of Washington campus he heads in Bothell. In a recent survey, half of the respondents didn’t even know of its existence.

But what about the other half? “The half that does know us,” beams Buck, “knows us very well. That’s really gratifying.”

While the Bothell and Tacoma branch campuses may be frequently overshadowed, they are increasingly difficult to ignore. In the mere 13 years since their start, each institution has made an impression and an impact on the extended community it serves.

DIVERGENT CHARACTERS

The sparkling and modern facilities of UW Bothell are settled within 57 pastoral acres of wetland restored from farms and ranches. One of its most pressing land-use issues is road access and parking, thanks from its broad draw from towns as far-ranging as Marysville and Seattle’s Eastside suburbs.

UW Tacoma, on the other hand, occupies a concentrated, 30-acre hub of restored brick industrial buildings near the rail line that once made the downtown the northwestern terminus for the Great Northern Railroad. The $80 million UW has spent to rehabilitate its edifices have been an important part of helping to revive Tacoma’s historic district.

The benefits of having a university campus in the region are seldom ignored by civic leaders, who fight hard to gain one. Bellevue and Everett competed heavily to have a portion of the campus that ultimately settled in Bothell. And Tacoma’s business leaders raised $5 million within their community to demonstrate their commitment during site selection.

“I firmly believe that UW Tacoma would not be where it is without the community’s support,” says Chancellor Vicky Carwein.

Those expectations of benefit have been
justified for both branches. UW Bothell has already seen its graduates begin ventures such as Echo Space, a Lynnwood-based software developer.

UW Tacoma has trained hundreds of desperately needed new nurses and social workers, and founded an ambitious new Institute of Technology. Its new construction has included space for restaurants and retail, and has attracted several new companies, including Expedia, to the renovated downtown.

Business students from both campuses regularly offer their analyses in marketing and management to area companies as part of their required hands-on projects. UW Bothell is a founding participant in the Bellevue Entrepreneur Center, while UW Tacoma’s standards for its business students (derived from surveying area company executives) have become the yardstick for local awards in business achievement.

RIGOROUS AND GROWING

While the Seattle campus shares its mission of teaching with a juggernaut of research, Bothell and Tacoma focus almost exclusively on educating people toward career-boosting degrees.

What both campuses have to fight, however, is any hint that, as smaller environments, they are in any way less rigorous. “We give absolutely UW degrees,” says Carwein. “All three campuses have to adhere to the same standards of quality. Our faculty is expected to do research and maintain UW levels of scholarship.”

If there’s any undeserved stigma, it’s certainly not reflected in the demand for seats in the classroom. Buck expects UW Bothell to increase its enrollment ultimately to between 6,000 and 10,000 students, as chartered by the state legislature. UW Tacoma has high expectations for its new Institute of Technology, and Chancellor Carwein would like to see the university expand into studio programs for fine arts.

— Gianni Truzzi

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RIGOROUS AND GROWING

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— Gianni Truzzi

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The University of Washington will play an ever-growing role in the state’s changing economy as Washington grapples with the rise of new industries, the decline of established industries, and the needs of a changing workforce.

To examine the university’s role in the current economy and how it might change in the future, Washington CEO magazine brought together a group of distinguished university and business leaders this past fall at the Columbia Tower Club in downtown Seattle for an informal roundtable on the issue. The following is an edited excerpt from the far-reaching discussion.

Alexander Global turned a few heads when they picked a regional bank.

The maker of the most popular line of dolls in the world could have chosen any bank. They went with Pacific Northwest Bank. And, according to co-owner Malcolm Alexander, the reason was simple. “We like Pacific Northwest Bank because they have a high level of service.”

Pacific Northwest Bank helps Alexander Global with a list of services that might make an ordinary banker’s head spin: processing payments from high-volume promotions, investing excess cash, negotiating letters of credit with international clients—as well as business loans and lines of credit.

Isn’t it time you gave Pacific Northwest Bank a second look?
What is the impact of the university on the local economy?

**Chuck Foisie** Seattle/King County EDC:
You can go anywhere literally in the world and find that the economic vitality of the region is tied right back to its university system. In fact, the inverse is also true. If you don’t have a vital economy in a region, it’s probably because there is a general lack of support for or lack of appreciation for what the university is contributing.

So, if you look at, for example, Boeing. Boeing’s been a big company in the Northwest and by definition a cyclical industry. But, frankly, if Boeing hadn’t been founded here, hadn’t been such a support for the university system, we probably wouldn’t have the university, at least not in its developed form, as we do today.

Now, we have another generation of success in the Northwest that’s supporting the university, and it’s taking the region in a different direction. And we have evidence that there’s a future for the Northwest, and it’s largely because of the research and the products and the new sciences coming out of the university that gives us a hope for the future.

**Jack Faris** University of Washington: I think Chuck has identified a really interesting dynamic of the current and future economy, which is the clustering around premier research institutions. Brookings published a really interesting report about a year ago called “Signs of Life.” It’s a study of biotechnology centers around the country. And they find that in every case they’re located only where there’s one, and often more, typically more than one, first-rate research university. And the other thing that they noted is that the firms that cluster in these environments don’t move, with very rare exception.

**John Nesholm** LMN Architects: Well, of course, it keeps the architects busy in our office. So, there’s absolutely a direct impact on people that do the work in the university that needs to be done outside and inside the campus. A reference was made to some of the impacts in Seattle, and obviously biotechnology is huge, and we talked to a lot of biotechnology people. There are two primary reasons the biotechnology firms say they’re here. They are the existence of two institutions: Fred Hutchinson Cancer Research Center and the University of Washington. So, it’s absolutely clear there’s a direct relationship. But the other observation I
would make is that we have been working on the branch campus in Tacoma for ten years, and that campus has really stimulated a lot of development right around it.

Jack Faris University of Washington: There’s some very sophisticated analysis of the economic impact, but, just to make it real easy for anybody to take a look at it, our external research support in dollars is now approaching about $1 billion a year. Virtually all of that comes from outside of the state of Washington. Almost none of it comes from the state budget of the state of Washington.

So, it’s an inflow of dollars that support superb jobs. They help fuel the development of new science and technology. And so just in that direct impact — of course, every dollar that comes in in that form gets multiplied both in the direct sense of its economic impact, but also in the long-term sense of the actual work that those research dollars support, being the real fuel of the future.

Do you expect the University of Washington to play a larger role in Washington state’s future economy in light of the downsizing of other major industries such as aerospace?

Chuck Foisie Seattle/King County EDC: Let me answer your question this way, by giving you a couple of examples of how the university activities directly impact my activities in terms of trying to attract companies here or work towards some other economic purpose. We’ve been working with a technology company to convince them that they need to relocate their corporate headquarters from Indiana to Seattle. And, when we first met with them about two months ago, they had on their short list Seattle, Boston, San Diego, and Austin, Texas.

When Paul Allen announced his grant to do brain research, that act, in and of itself, to support the research efforts in the
region, dropped Austin and San Diego from their list. It’s now down to Seattle and Boston.

Now, the challenge we have is, despite the great university in the state, we have a limited number of other inducements to offer them. Many states are able to be much more aggressive in the kinds of incentives that they will use to attract a company. So, we’re at a handicap here.

Jack Faris University of Washington: I want to take a second and touch on a couple of facets of computer science and engineering topic that I think are important. One is that we’ve got this brand new building that we dedicated yesterday, the Paul G. Allen Center for Computer Science and Engineering. Prior to this building, in the traditional continuum, there are really intensive interactions between the people who work there, teach there, study there, and a broader community, including a lot of folks at Microsoft.

We have an Intel lab that’s associated with the University of Washington, a department that’s just adjacent to campus. So, we have to really kind of understand that the university no longer sits in isolation, but is in a very dense and highly-energized web of interactions with people who are doing similar kinds of things, but happen to reside in places like Intel and Microsoft.

What’s the next step for the university? Where do you see strengths for the university?

Craig Hogan University of Washington: Well, the growth of the university right now is in the service sector because that’s where the money is, and that will continue following the federal trends. That’s an agenda that’s being set in Washington, D.C. Over the past five years, there’s been a doubling in the budget from the National Institutes of Health, which has fueled this explosive growth in our research fund. We just follow that trend up.

What we’re hoping is that the federal government will address some of the shortfalls in other areas. Over the last five years they have not grown their funding in the physical sciences nearly as much. So, these foundational areas, like physics, for example, which is the basis of all the imaging technologies, microscopy, and all medical sciences, those areas have been relatively starved.

John Nesholm LMN Architects: From a facility standpoint, I think the challenge is to make sure that the university’s facilities keep up with current ways of teaching and doing research, and that’s a continuing challenge.

I think the next up will really be the business school. The business school wants to grow their graduate level education program. And the way business is taught now around the country requires facilities that are very different than the kinds of facilities the business school has.
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