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Abstract (Document Summary)

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Three other students who live in Mr. Koffel's dorm and work at Akamai Technologies Inc. were in the same fix. So Mr. Koffel poured out his predicament to F. Thomson *Leighton*, the MIT professor who helped found Akamai. After the two professors conferred, the students sent an e-mail to Mr. Kaashoek asking for a new homework assignment.

Mr. *Leighton* realizes the situation was awkward, but says the issue isn't simple. He says Mr. Kaashoek has started his own company, SightPath Inc., that is attempting to do work similar to Akamai's. Indeed, Mr. *Leighton* wonders if his fellow professor gave that assignment as a way to learn more about Akamai's progress.

Full Text (2125 words)
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CAMBRIDGE, Mass. -- William Koffel, a junior at the Massachusetts Institute of Technology, was among the brightest students in his 6.033 Computer System Engineering course last spring. But he couldn't handle one of the homework assignments from Prof. M. Frans Kaashoek.

It wasn't that the assignment, to design a new system to speed up delivery of Web pages, was too complex. Actually, it was easy, because Mr. Koffel already had been working on just such a project -- not as a student, but as an employee, at a company co-founded by a different MIT professor. And Mr. Koffel was bound by a nondisclosure agreement, or an NDA, not to reveal his work for the company.

"At first I thought, 'What a boring project if I have to write about something I already understand,' " recalls Mr. Koffel, 21 years old. "Then I thought about the nondisclosure agreement I signed and wondered if I could do my homework at all."

Three other students who live in Mr. Koffel's dorm and work at Akamai Technologies Inc. were in the same fix. So Mr. Koffel poured out his predicament to F. Thomson *Leighton*, the MIT professor who helped found Akamai. After the two professors conferred, the students sent an e-mail to Mr. Kaashoek asking for a new homework assignment.

He agreed -- but reluctantly. "I felt the students were getting a bad deal. The students should be able to do any assignment at MIT," Mr. Kaashoek says. "I'm not going to let it happen again. It's ridiculous that an NDA is going to set the content of my course. In the future, my policy is going to be, 'If you sign an NDA, you take this class at your own risk.' "

Mr. *Leighton* realizes the situation was awkward, but says the issue isn't simple. He says Mr. Kaashoek has started his own company, SightPath Inc., that is attempting to do work similar to Akamai's. Indeed, Mr. *Leighton* wonders if his fellow professor gave that assignment as a way to learn more about Akamai's progress.

Mr. Kaashoek insists it was homework, not espionage: "There's tons of companies in that space." But Mr. *Leighton* isn't so sure. "Frans was aware of exactly what we are doing," he says. "If Akamai didn't exist, would he have thought of this question? It's not clear."

What is clear is that on many campuses, student jobs have come a long way from the days of busing tables in the cafeteria or checking the footnotes in a professor's research project. And as the payouts at Internet start-ups skyrocket, some of the conflicts these jobs present are as cutting-edge as the technology they develop.

High-tech launches from universities frequently can't get off the ground without a steady supply of students, who are often the most talented and the most willing to toil around the clock. But intense schedules on the job can keep students from doing their best academic work. And when both student and teacher share a huge financial incentive to make a company a success, some professors might be tempted to look the other way when studies slip or homework gets in the way.

Other universities with top-notch engineering programs, such as Stanford or Cal Tech, are also grappling with the phenomenon, but nowhere are the dilemmas more intense than at MIT, the school responsible for such pioneering innovations as commercial spreadsheet programs and encryption for secure online transactions. MIT actively encourages professors and students to turn university-developed technologies into businesses, which often results in a return to the school in licensing fees, royalties or stock. The MIT Technology Licensing Office coaches students and faculty on how to set up companies and connects them with venture capitalists. The office has helped create about 150 companies that are still in business; MIT holds equity in about a third of them.

MIT official policy requires professors to disclose any situation that might pose a conflict; potential problems are then worked out with the department heads on a case-by-case basis. But the number of students working at start-ups has soared so quickly that issues like the homework problem have taken the school by surprise. "We're making up policy as we go along," says John Guttag, head of MIT's Department of Electrical Engineering and Computer Science.

He sometimes turns down faculty who ask for leaves to start companies; otherwise he wouldn't have enough professors to teach courses. Meanwhile, some professors note that students are more frequently missing assignments and getting poorer grades because of work commitments at start-ups.

A walk down the main hallway of the computer-science department shows how close the academia-business relationship has become. Prof. Stephen Ward is on leave getting his technology company, Curl Corp., off the ground. David Gifford helped set up e-commerce pioneer Open Market Inc.

and is now working on SightPath with Mr. Kaashoek. Mr. Gutttag himself says he may sign on as an adviser to Vanu Inc., an Internet company based on Ph.D. research by one of his graduate students.

Mr. Gutttag often sees students wondering whether they should stay in school or work for Vanu. "I'd start to tell them, 'No, don't go, stay at MIT and do research for me,' and realized that I had a conflict too."

Such problems required Mr. Gutttag to weigh in with faculty earlier this month. "My perception is that an increasing number of our students are being hired to work at companies in which MIT faculty members play a significant role," he wrote to professors. That raises "some serious issues with respect to potential conflicts of interest, and has already put some of our students in difficult situations."

Mr. Gutttag mandated that from now on, when a professor wants to hire an MIT student for his company, the student must first meet with another faculty member for counseling. After that, it's up to the student, but at least he or she will have had the benefit of some impartial advice.

And starting in the fall, students who sign nondisclosure agreements will not be given alternative homework, Mr. Gutttag says. To Mr. Kaashoek, that means students who won't do their work because they've signed an agreement will flunk the assignment. To Mr. *Leighton*, that means a student who works at Akamai might have to let his company "review a homework assignment before it was turned in."

Such arrangements can stifle the very openness so important to higher education, says Mr. Gifford, the computer-science and engineering professor. "Part of academic life is to write papers and have them judged by others," he says. Students who sign nondisclosure agreements "are now cut out of a lot of academic discourse."

And the impact can go deeper, some fear. "I think someone should be asking these students, 'Will you be sorry 15 years from now that you were too busy in college to have a boyfriend or a girlfriend? That you didn't play a sport, or act in a play? Are you going to be sorry you didn't take your studies seriously?'" says Mr. Gutttag. He notes there is "an inherent conflict of interest" for entrepreneurial professors: "Once you've started a company . . . you're in sell mode, and it's hard not to be in that mode when talking to students, too."

Still, Akamai is the talk of MIT these days. The company just unveiled a board of advisers that includes Tim Berners-Lee, director of the World Wide Web Consortium, and Peter Solvik, Cisco Systems Inc.'s chief information officer. Akamai recently closed a second round of financing for \$35 million, and last month it won the 1999 MIT Sloan eCommerce Award for Rookie of the Year -- given to the start-up most likely to dominate its field.

No company has been more closely tied to MIT. The firm has its roots in a research project directed by Mr. *Leighton* about three years ago. Daniel Lewin, one of Mr. *Leighton's* graduate students, came up with a key idea for how to apply algorithms, or numerical instructions for computers, to Internet congestion problems. He and some fellow students worked on the issue for a year, then published a paper in May 1997.

That fall, Mr. Lewin talked to Mr. *Leighton* about joining a student-run team for an MIT entrepreneurship contest -- grand prize, \$50,000. Mr. *Leighton* signed on.

Their team didn't win the contest, but no matter. By mid-1998, Mr. *Leighton* and Mr. Lewin were on the entrepreneur's road, looking for financing. Battery Ventures, a venture-capital firm based in Wellesley, Mass., along with Polaris Venture Partners, based in Boston and Seattle, put up \$8.4 million.

They hired 15 undergraduates to code the algorithms. They bought computers and started to build a prototype for their new network system.

Akamai, Hawaiian for intelligent, clever and cool, was born.

Messrs. Lewin and *Leighton* struggled to keep their MIT and Akamai responsibilities separate. Mr. Lewin had completed his master's thesis, which inspired Akamai's technology, in May 1998. Mr. *Leighton* told Mr.

Lewin to have a second professor co-sign the thesis, to certify that the quality of the work met rigorous academic standards. Mr. *Leighton* says he wanted a second signer because he worried about the appearance of conflict in his supervising Mr. Lewin's academic work while also pursuing a business venture with him.

Mr. Lewin got a co-signer: David Karger, who was involved in Mr. Lewin's original research project and would later become a part-time research scientist at Akamai. Mr. *Leighton* says he now wishes that someone completely outside the group had co-signed the thesis, but he didn't think much of it at the time because Mr. Karger hadn't played an active role in the entrepreneurship competition.

Since its founding, Akamai has aggressively used its MIT connections. Of the firm's 104 employees, 20 were students in the last semester, including 16 who were undergraduates or enrolled in a joint bachelor's-master's degree program. Ten more students have been hired to work for the summer.

"This company exists because of students," says Paul Sagan, the company's president. MIT, plus its faculty and students, now have about 40% of the company's shares.

But to maintain good ties with the school, Akamai has had to negotiate some tricky policy positions.

For one, the company voices a strong stance against students dropping out. Early on, Mr. Sagan says, some students approached him about going full time. "I told them that if they drop out of college before completing their undergraduate degree because they want to work full time at Akamai, we won't offer them a full-time job," says Mr. Sagan.

Akamai also faced a problem over stock options. At most companies, options expire once an employee is no longer working there full time. But at Akamai, graduate students' options continue to vest as long as the students work an average of 20 hours a week while completing their degrees.

For undergraduates, the Akamai experience can be heady stuff. Luke Matkins had just finished his sophomore year when he joined the Akamai team for a summer job. He would spend all night programming; then, "in the morning, the guys from the venture-capital funds would come by, and I'd be in charge of leading the demo," says Mr. Matkins. Soon, he found himself in charge of a group of four to eight programmers.

Mr. Matkins began working 70 to 80 hours a week on top of his classes. Now, at the age of 21, he earns a salary of \$75,000 -- more, he says, than his schoolteacher father makes. He was given 60,000 options, a stake now worth over \$1 million based on the latest price venture capitalists paid per share.

His grades weren't as high as they would have been had he spent more time on homework. In his computer-systems class, he got a B because he was too busy to complete all of his assignments. He sometimes skipped lectures. The work at Akamai, he says, was far more compelling.

Mr. Matkins says the prospect of being a millionaire by his senior year is "very cool." He loves MIT, but in many ways, he says, Akamai has become his real university. "There are different ways to learn stuff," he says. "I've learned more at Akamai than I would in a classroom."

Meanwhile, Mr. Lewin, 29, is taking a year off from his coursework toward a Ph.D. so he can concentrate on his duties as chief technology officer at Akamai. He plans to use his work as the basis of his doctoral dissertation, but says he'll probably need permission from the Akamai board of directors -- on which he sits. He will also probably need approval from Akamai's chief scientist, Mr. *Leighton*, who, it turns out, is his Ph.D. adviser.

Credit: Staff Reporter of The Wall Street Journal