Young and Very Inventive

One day this teenager realized it was time to start putting his ideas to the test.
By Robert Gens as told to Edward McPherson

As far as I know, I'm the only high-school kid who works at the M.I.T. Media Lab. The graduate students there are about 26 or 27. I'm 17. My free time used to be spent dreaming about things I could eventually build. Now I can point my finger at what it would take to make an idea a reality.

As a middle-schooler, I was walking down "the infinite corridor" — the main hallway at M.I.T. — when I saw a large, projected, digital smiley face off to one side. Naturally I walked up to it, because I'm that kind of person, and it began to frown. I wondered how it knew I was approaching — my first idea was a camera. It was outside an exhibit of creative technologies, so I went inside and asked the guys from the Media Lab some questions, and one of them gave me his business card. It wasn't until last year that I picked it up again and realized: they can answer a lot of my questions. So I e-mailed Ted Selker, a professor, to see if I could help out around the lab. I wrote, "Look, I know you don't usually do this kind of thing, but I would like to ask for your special consideration." Weeks later, I got a response: "Come by the lab and we'll see what you can do." I designed a circuit board for a grad student, and after a few months, Ted said, "Let's put you on payroll — if you're over 16."

When I first came there I made the assumption — just to set myself straight — that everyone at M.I.T. was smarter than I was. What I realized later is that *everyone* makes that assumption, and it allows everyone to learn from one another, which is really cool. The Media Lab is the most collaborative place on earth. One time after Ted had had a doctor's appointment, he walked into the office where I was working with a couple of graduate students and said: "My doctor didn't wash his hands! This is a problem we have to solve." By the end of the hour, the white board was filled with sketches of things that would detect hands — like infrared beams — and things that would measure water levels and the optical density of the water as it went down the drain to make sure dirt was coming off. The next day, we decided I would create some software that would bridge onto an image-recognition system we had already built — a camera that sits on top of a sink, which can tell, based on color patterns and whatnot, whether a hand, a pot or a vegetable is in the sink. So I wrote software that would time how long a person's hands were in there. I added a radio-frequency ID scanner: each doctor would have a badge that he would wave across the reader to authenticate that he was washing his hands.

But forcing a doctor to wash his hands — how could we do that? Ted and I built a powerful electronic doorstop. It worked to a degree. The idea was that it would leave the door to an examination room open. The patient wouldn't feel comfortable getting undressed until that door was closed — and that wouldn't happen until the doctor washed his hands. But there were these worries about fire codes and things that don't matter to inventors. So we played around with dimming the lights in the room until the doctor had washed.

Companies pay to have access to the Media Lab's technologies. I found myself demo-ing it to corporations from Norway to the United States to Japan. One company didn't like that the patient would be in a dim environment near needles. The final idea the group chose was that the water stream would flash red and blue after the doctor washed. Would a doctor really wash because the water was sensational? I don't think it's enough to motivate them. I would have gone back to changing the room's lighting — maybe just in the sink area.

The project I conceived with Ted over the summer is called Virtual Campus. Say you're the typical M.I.T. student, and you've just finished a hideously long problem set, and you have another, but you don't want to dive right in. You log on to Virtual Campus, and it displays an interactive map that automatically zooms in on your location as it plots all the day's events around you. You see there's a poetry reading in half an hour over here, and it tells you there's going to be a robot demonstration in two hours over there, and it knows you like robots because you've previously queried the system about them. It also has summoned the name and location of your friends, and you realize: Hey, these guys are going to the robot demo also — forget the other problem set! I developed a couple of pieces of software to do this. There were some really fun days this summer when I ran around campus with a laptop — not "breaking into" classrooms but going into classrooms to see if I was able to track my location. We just finished a proposal for the iCampus grant from Microsoft Research. The question is: How would we build a cell-phone version of this?

I sent my college application out to M.I.T. for early action, and Caltech too. In terms of future plans, I don't know what I want to do exactly, but I wouldn't feel bad labeling myself as an inventor. There's something romantic about coming up with something new that can change people's lives. ■