

three-dimensional computer simulation of, for example, a bolt being fitted into the correct hole on a jet engine or a drug docking with its receptor.

The interface transmits haptic feedback to the user when output from the computer simulation alters the currents flowing to the six coils, generating forces and torques on the joystick. Crash a virtual object into a virtual wall, for example, and you would feel the impact and recoil through the joystick.

The technology allows only a limited range of motion: 15 to 20 degrees—about 2.5 centimeters—in all directions for the current device. “To get a larger range of motion you need a bigger motor, and that would require much bigger magnets, so the device would get cumbersome,” says electrical engineer Blake Hannaford of the University of Washington, Seattle. “But no device is going to be perfect, and Ralph’s is very good.”

The next challenge is to improve the software so that the device can interact with a wide range of computer simulation programs. “What we want to create,” says Hollis, “is software that is application independent,” much as it is for a mouse today—software that would allow a user to simply plug in the haptic interface and touch the virtual world.

—JOSEPH ALPER

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## CANADA

### Planned Chiropractic Merger Riles Faculty

**OTTAWA, CANADA**—The tape-recorded message on the phone at the Canadian Memorial Chiropractic College (CMCC) explains that chiropractics is a “science and an art and a philosophy. It’s about hands-on healing.” But several scientists at Toronto-based York University say it’s none of those things. And they have enlisted prominent medical researchers from around the world to help them fight a planned affiliation between CMCC and York, Canada’s third-largest university.

Last May, York’s governing senate approved in principle a plan to offer an undergraduate degree in a field that relies on spinal manipulation, rather than drugs or surgery, to treat disease and improve health. A major component of the arrangement would be a \$16 million classroom facility built by CMCC on land leased from the university. Officials

view the deal as an opportunity for the university, which lacks a medical school, to expand its presence in the health sciences. “More and more, chiropractics are part of an overall approach to health,” says York’s associate vice president for research, Brock Fenton.

But opponents say that keeping company with chiropractors will have the opposite effect. “Surely this kind of affiliation will badly influence our academic reputation,” says chemistry professor Deithard Bohme. Last fall, the university’s Faculty of Pure and Applied Science voted against affiliation by a margin of more than 2-to-1, and in recent weeks faculty members have gathered support from such scientific luminaries as Stanford’s Arthur Kornberg and Dana-Farber Cancer Institute’s Beruj Benacerraf, who have signed onto a statement that “the affiliation would serve to legitimize the unscientific and even antiscientific philosophies and practices associated with chiropractic.”

That hostility already has forced York officials to abandon a plan to make chiropractors members of the pure and applied science faculty. They are now considering creating either a stand-alone entity for chiropractors or one that includes all health-related disciplines. But one leading critic, physics and astronomy professor Michael De Robertis, believes that idea is also flawed because the university doesn’t have the expertise to exercise proper oversight of chiropractic training. “They should affiliate with a university with a medical faculty to learn the techniques that will help them become more scientific,” he says, adding that other disciplines “started out being equally voodoo” before becoming respectable by adopting scientific methods.

CMCC President Jean Moss dismisses the controversy as a “hangover from 20 or 30 years ago” and says that recent articles in reputable journals make a strong case for the contribution of chiropractors to a patient’s overall well-being. “As an institution, we believe that the body does have the inherent ability to heal itself and that we do assist the body by manipulation of the spine.”

**“We believe that the body [has] the inherent ability to heal itself, and we assist the body by manipulation of the spine.”**

—Jean Moss

The heated debate could come to a boil next month at a meeting of the faculty senate, where four panels are ironing out details of the planned affiliation on issues ranging

from curriculum to research. Opponents want the university’s president, Lorna Marsden, to convene an independent group to examine chiropractic’s scientific merits. A spokesperson says Marsden has no plans to do so, saying it would circumvent last year’s vote. Bohme says he will introduce a motion for such an external review if Marsden declines to act.

Chiropractors are generally trained in independent schools offering a 4-year program, and half the provinces in Canada and most U.S. states recognize chiropractic care in patient health plans. Yet there remains considerable controversy about the efficacy of treatment. A recent editorial in the *New England Journal of Medicine* by Paul Shekelle of the Los Angeles Veterans Administration Medical Center (8 October 1998, p. 1074) says chiropractics has been shown to provide “somewhat effective symptomatic therapy for some patients with acute low back pain” but that it is inappropriate “as a broad-based alternative to traditional medical care.”

CMCC failed in attempts earlier this decade to link up with three Canadian universities. Moss says the stumbling blocks were unrelated to the quality of care provided by chiropractors and included the logistical problem of absorbing 600-plus students. But provost Penelope Coddling of the University of Victoria, which declined a CMCC offer to affiliate, notes that senate records of the decision include a belief that “research in chiropractic at this time is not consistent with contemporary standards of university research.” A spokesperson for Calgary University, which also weighed affiliation, says president Terry White “cannot comment” on the school’s experience with CMCC.

York’s Fenton contends that the union will strengthen the university through greater diversity. “You have to be broad-minded about what goes on in universities,” he says. But critics don’t buy that argument. “It’s irresponsible of York to do this,” says Montreal-based pediatric practitioner and McGill instructor Murray Katz, who has criticized chiropractics as an expert witness in coroner’s inquests and civil lawsuits. “It’s a treatment in search of a disease.” —WAYNE KONDRÓ Wayne Kondro writes from Ottawa, Canada.

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—Michael De Robertis