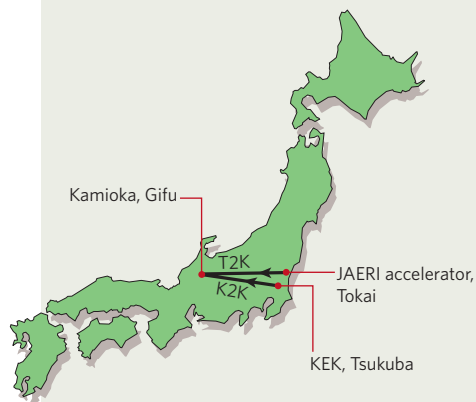




'PERSONAL SPACE' SURVIVES IN VIRTUAL REALITY
Real social rules are mirrored in 'Second Life'.
www.nature.com/news

A very lengthy business



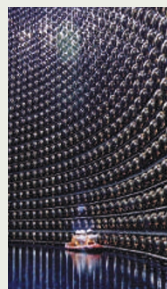
JAPAN

K2K 250 km

The first 'long-baseline' experiment, running from 1999 to 2005. Designed to confirm the neutrino oscillations reported by the Super-Kamiokande (pictured) experiment studying atmospheric neutrinos. By comparing neutrino events at the source and at the far detector, scientists could spot the disappearance of muon neutrinos, and infer their oscillation.

T2K 295 km

Due to begin in 2009, this experiment will look for electron neutrinos in a beam that initially consists of muon neutrinos after it has travelled 295 km underground. The beam is more intense than existing ones, which should maximize the probability of oscillations occurring.



SUPER-K DETECTOR

Warning flag for ethics boards

You're sitting on a university's ethics panel. A proposed experiment into the neurobiology of social behaviour comes up for approval. Subjects' brains will be scanned while they perform a series of tasks. Some of the participants have a history of disturbed social behaviour; one task involves viewing violent images. On completion, participants are simply asked to leave the laboratory. Would you give the experiment a green light?

If you're not sure, don't worry: neither are many real ethical review boards. When Canadian researchers asked their country's boards to rule on the protocol described above, they found a startling lack of conformity. All the boards that responded seemed to use similar ethical norms when judging the project, but thirty rejected it, ten approved it with qualifications, and three waved it through unconditionally (J. de Champlain and J. Patenaude *J. Med. Ethics* 32, 530-534; 2006).

"Everyone knows institutional review boards make very different decisions," says Joan Sieber, a psychologist at California State University, East Bay, who helps to train board members. She argues that it would be unrealistic to expect all boards to reach the same decision, but that the range of answers given shows that ethical norms are being applied in worryingly different ways. "This shows that something needs to be done."

The Canadian study is the work of Johane de Champlain and Johane Patenaude from the University of Sherbrooke in Quebec. The pair say they wanted to examine the belief that "considerable divergence" exists between review boards. In their experiment, each board knew that the protocol it was viewing was fictional, but was told to handle the proposal as it would any other.

Some boards worried that the consent form did not tell participants they would be viewing violent images. Another complained that the rationale for the study — to gather neurobiological knowledge that would inform "the direction in which we wish to see society develop" — reminded them of the "atrocious eugenics movement in the late nineteenth century". Two boards also noted that the rationale was not made clear in the consent forms.

Sieber says review boards need to be more rigorous in their risk assessments and decisions, and says they should call in outside experts where necessary. She adds, however, that a more common problem with institutional review boards is not a willingness to allow dubious studies, but an overly cautious approach that comes from ignorance of the experimental methods involved. ■
Jim Giles

UNITED STATES

MINOS 720 km

A beam three times longer than K2K, with higher intensity and energy, enables MINOS (pictured) to detect more events. It generates neutrinos from protons accelerated at Fermilab. The experiment looks for the disappearance of muon neutrinos, and in March 2006 it reported significant evidence of their oscillation.



FERMILAB



VLBN >2,000 km

Proposed by Brookhaven National Laboratory and at a preliminary study stage, the VLBN project aims to use a beam more than 2,000 km long (potential routes shown). It might even detect the same particles oscillating more than once along their route.

NOvA 720 km

Scheduled to begin operation in 2011, NOvA will use the same beamline as MINOS, but will have its detectors located off the beamline axis. This yields a narrow-band beam with less background noise, increasing the chance of detecting muon-to-electron oscillation.

EUROPE

CNGS 730 km

Two experiments, OPERA (pictured) and ICARUS, will analyse the neutrino beam coming from CERN using different detectors that for the first time will be able to detect the appearance of tau neutrinos, and not only muon neutrinos disappearing.



LNGS

