

## If You Know How a Cow Feels, Will You Eat Less Meat?

Inside a lab on the Stanford University campus, students experience what it might feel like to be a cow

By Anne C. Mulkern and ClimateWire | Wednesday, July 10, 2013 | 14 comments

STANFORD, Calif. -- Inside a lab on the Stanford University campus here, students experienced what it might feel like to be a cow.

They donned a virtual reality helmet and walked on hands and feet while in a virtual mirror they saw themselves as bovine. As the animal was jabbed with an electrical prod, a lab worker poked a volunteer's side with a sticklike device. The ground shook to simulate the prod's vibrations. The cow at the end was led toward a slaughterhouse.

Participants then recorded what they ate for the next week. The study sought to uncover whether temporarily "becoming" a cow prompted reduced meat consumption.

The motivation wasn't to make people vegetarians, said Jeremy Bailenson, director of Stanford's Virtual Human Interaction Lab. But the project hoped to uncover whether virtual reality could alter behaviors that tax the environment and contribute to climate change.

"If somebody becomes an animal, do they gain empathy for that animal and think about its plight?" Bailenson asked. "In this case, empathy toward the animal also coincides with an environmental benefit, which is that [not eating] animals consumes less energy."

It's one of several environment-related experiments Bailenson is conducting in the lab, all tailored toward revealing whether there are new ways to encourage environmental preservation. Volunteers also have virtually chopped down a tree, a study aimed at examining attitudes toward paper use. Others took a virtual reality shower while eating lumps of coal -- literally consuming it -- to gain insight into how much was needed to heat the water.

Virtual reality, along with computer games and other kinds of technology, is being used to approach environmental issues from new angles. The National Science Foundation awarded a \$748,000 grant to Stanford and Harvard University to run four experiments. Meanwhile, in Vancouver, British Columbia, that city, smaller townships and professors from the University of British Columbia are running sustainability-related experiments that use visualization techniques.

The work is important because many people have difficulty grasping climate change facts, said Tim Herron, who manages the Decision Theatre lab at the University of British Columbia.

"It's just a much more compelling way of getting people to understand the effects of their behavior now on the future," Herron said. "It's about visualizing the data for people. Once people can see it, it's amazing how much it changes things. People begin to really understand the necessity to make some changes now to prevent these sort of things."

### Studies have long-term impact

Virtual reality experiences can alter behavior, Bailenson said. The tree experiment in particular, he said, has stuck with those who went



through the experience.

The research came out of a news article Bailenson read that said if people did not use recycled toilet paper, over the course of their lives they would each use up two virgin trees.

In the subsequent experiment Bailenson ran, students stood in the virtual reality version of a forest where they heard wind rustling and birds chirping as they flew past. The participants held a device meant to represent a chain saw, and felt resistance as they passed it back and forth through a tall tree.

The wood cracked, then crashed to the ground with a thunderous boom. The forest fell silent, birds no longer singing.

Before the student left the lab, a woman there knocked over a glass of water on a desk and asked the participant to help her clean it up. The people who had gone through virtual reality used 20 percent less paper than those who had watched a video of a tree being cut down, Bailenson said.

Bailenson said he gets emails months after that experiment from people telling him they can't walk down the toilet paper aisle of a store without thinking about the falling tree.

The results of the cow experiment aren't yet finalized, so Bailenson doesn't know whether people ate less meat in the days afterward. But the comments from the study participants show they did empathize with the cows, he said. Stanford does not release names of the volunteers but provided some of their answers to questions presented after the experiment.

"Once I got used to it I began to feel like I was the cow," one person wrote. "I truly felt like I was going to the slaughter house towards the end and I felt sad that I (as a cow) was going to die. That last prod felt really sad."

### **Funding obstacles for climate research**

Bailenson hopes to move more into the climate change arena, though so far he hasn't won funding for that effort. He's applied for grants with the National Science Foundation, but none has been successful.

In an interview, he answered cautiously when asked whether the subject is too politically dicey. He said that at NSF, "there's variance among reviewers as to the scientific details of global warming."

"Even among scientists who are fairly certain that global warming is real, which is most scientists, what the exact effects are going to be depend on the model of what's going on with warming," he added. "There's a lot more variance in what people think the outcome to warming is going to be."

Debbie Wing, a spokeswoman at NSF, said she could not comment on research proposals that hadn't been funded. But she said all requests "go through a gold standard, merit-based, peer-reviewed evaluation for selection."

Bailenson has secured some money to teach about ocean acidification. The cause of that -- the seas absorbing excess carbon dioxide -- essentially has the same culprit as climate change, he said.

He envisions developing a virtual reality experience in which a person would perform common activities in his or her home, all the while generating black balloons that represent carbon dioxide emissions. Those balloons would then ride up into the atmosphere and subsequently fall to the ocean. Once in the water, the molecules would prompt a change in the waters' pH.

He said he could potentially have the person become a fish trying to find food that's vanished, or an organism on a reef struggling to finding calcium for shell. The initial results of the cow study, showing that people do empathize with the animal, indicate that the same model could be useful in other experiments, he said.

### **Playing video games to visualize climate change**

In Vancouver, computer games are being used to illustrate the effects of global warming.

High school students from the suburb of Delta go to the Decision Theatre to play a game where they make decisions about land development and power use. "It's like 'SimCity' with climate change overtones," the Decision Theatre's Herron said, referring to the series of city-building computer games.

Students can opt for choices that mitigate the effects of climate change, like putting housing next to transit, while "if you make other choices, you end up with waterfront property" because of flooding, he said.

Delta is funding the experiment as it faces major choices about adaptation. Sea-level rise likely will override existing dikes in the region, Herron said.

The idea is to talk to students and their families about picking options that can benefit people and "not try to sell it as we have to give up" everything, Herron said. If it's presented as all sacrifice, he said, people won't buy into it until forced to and it's too late to limit warming.

At Harvard, the effort focuses on negotiation.

Participants sit in front of a computer screen and take on the role of a park ranger or a golf course owner while discussing uses for a pond and surrounding land. In one version, they then swap roles and debate from the other side.

Those who fill both personas "compromise more and form better relationships" than those playing just one role, said Hunter Gehlbach, associate professor of education at Harvard. The experiment measured negotiation by giving volunteers a pretend commission that increased if they brought the other person closer to their side and decreased for concessions.

The tests are important, Gehlbach said, because it's one thing to know the correct scientific approaches to an environmental problem but another for disparate sides to agree on a solution.

"We know an awful lot about global warming, and yet there are a lot of personal and emotional, nonscientific barriers to getting better policies out there," Gehlbach said. "That's where I think the social science comes into play."

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