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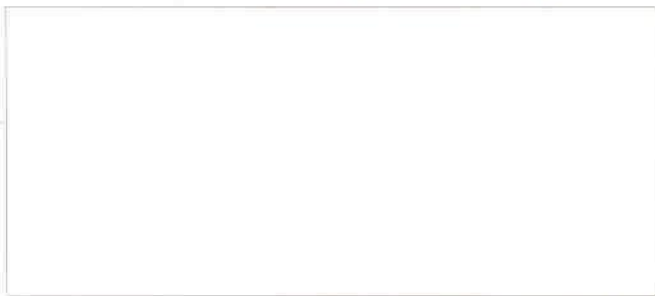
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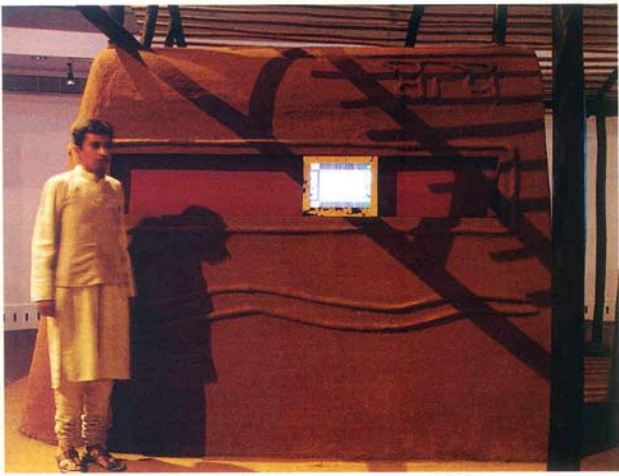




SACRED TECH

Ranjit Makkuni is using sophisticated technology to change how we interact with computers. In the process, he's taking traditional Indian beliefs back to the future.

By David Womack



Opposite page: A group of children hold hands around the Harijan Pillar in the Eternal Gandhi Multimedia Museum.

This page, above: A model of a traditional hut. Viewers can slide the interactive display to see historical footage.

Above right: Interactive mask that teaches the legacy of Gandhi. The glasses double as video screens. **Left:** Image and screen from "The Crossing," an exhibition about retaining identity in the face of technology proliferation.

Ranjit Makkuni's day starts around 7 a.m. with two hours of sitar practice—he's getting ready for a concert performance—an hour of yoga, and an hour of meditation. By 11 a.m., he's in his workshop in the Indian capital of New Delhi. His tools are a jumble of the old and new: clay pots, traditional paintings, and sculptures mixed in with microchips and motion sensors. Makkuni spent nearly two decades as a senior researcher at the legendary Xerox PARC in Palo Alto, California, where he was part of a team widely credited with developing the first GUI, or graphical user interface; he then went on to break new ground in tactile interfaces. Now, Makkuni has returned to his native India and founded the Sacred World Foundation, an organization whose mission is to revolutionize interaction between humans and computers by bringing together the ancient traditions of India and the innovations of Silicon Valley.

One of the traditions Makkuni is exploring at the moment is the *mudra* system of hand positions associated with Buddhist and Hindu philosophies. The *Dhyana mudra*, for example, entails placing both hands in one's lap so that the thumb and middle finger of each gently touch, an act that conveys to other followers that a person is meditating. The *Dhyana mudra* also involves positioning the body in a way that invites enlightenment. Makkuni is working with software that can recognize *mudras* and respond by playing a video or audio file, for example, or simply shut down. "What if, instead of using a mouse, we used hand positions that not only help us get work done, but generate creativity and compassion?" he asks. "It seems to me that if you're going to interact with a machine for 8 or 10 hours a day, it had better generate well-being for you."

Much of Makkuni's research is focused on freeing us from what might be called the modern posture: slumped with belly sagging, eyes restlessly scanning the screen, fingers twitching on computer keys. This posture is a result of the western paradigm in which data comes in through the eyes, makes a loop through the head, and exits through the mouth or fingers. We might as well be brains in jars, at least for the duration of the workday. In many eastern traditions, however, it is believed that intelligence is distributed throughout the body, and that thinking and moving are inextricably connected. Or, to paraphrase Makkuni, if the *Dhyana mudra* invites enlightenment,

what kind of thinking does sitting slumped in a chair all day invite? "I am trying to understand the mental and physical connections that have been encoded in various traditions so that our interaction with information is not restricted to keyboard and screen," he says.

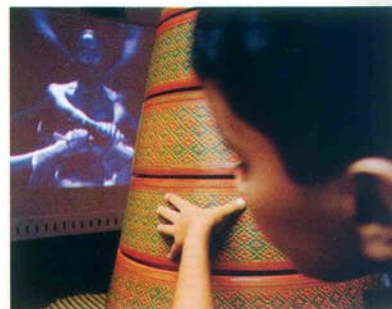
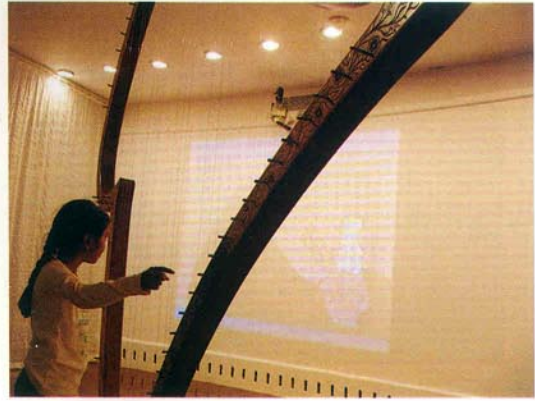
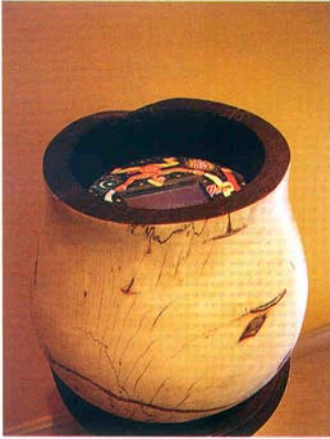
Makkuni's longtime boss at Xerox, former chief scientist John Seely Brown, describes Makkuni's influence on the lab as both profound and lighthearted—he could calm a stressful situation just by entering the room. "The East and West have deeply ingrained and profoundly different traditions for communicating knowledge," says Brown. "What makes Ranjit's work so exciting is that he explores traditions that could take human-computer interaction along entirely different trajectories, if they are allowed to."

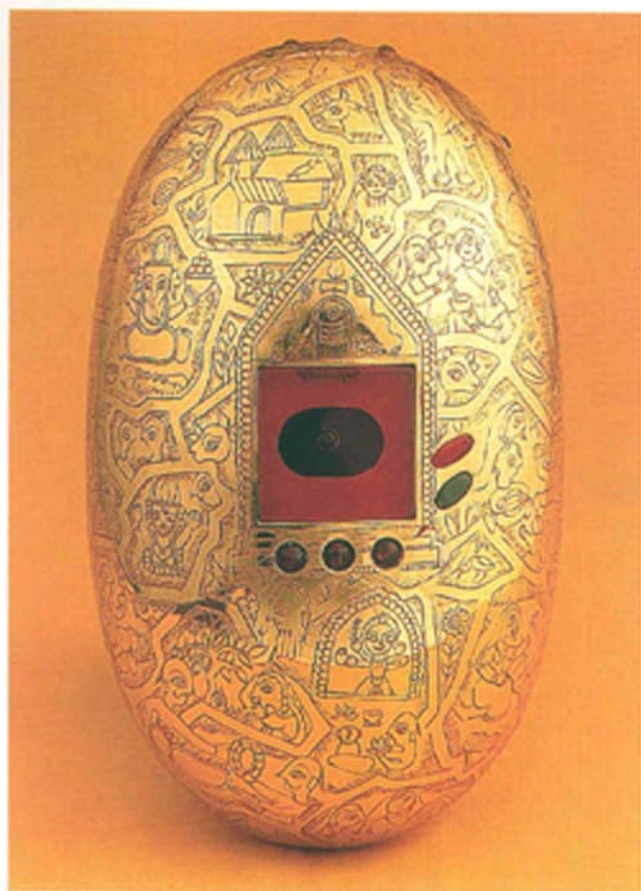
Makkuni's largest project to date is the Eternal Gandhi Multimedia Museum, which opened in March 2005 at Birla House in New Delhi, the site where Mahatma Gandhi spent the last few months of his life and where he was assassinated in 1948. The goal of the exhibition is to bring Gandhi's message to a new generation by engaging them both intellectually and physically. To activate the Harijan Pillar installation, visitors hold hands around an intricately carved column; when the circle is complete, the installation begins to glow from within. To get a group of Indians—men and women, Hindu and Muslim—to all hold hands is no small feat, and the installation mirrors Gandhi's efforts to overcome prejudice.

Almost every interface in the museum requires physical interaction. One installation appears to be a bucket of rock salt, but when visitors run their hands through it, the motion triggers a display of historical footage showing Gandhi's famous protest against the British monopoly on salt production. For an installation about Gandhi's marches, visitors move one of three "e-Pilgrim" sticks to select a march, and then walk along holding the stick, keeping in step with the famous leader. An installation titled simply "Gandhi Posture" invites the visitor to assume one of five poses associated with Gandhi's various activities. For example, when the visitor crouches down and puts one hand on the floor, the video projector plays historical footage of Gandhi discussing the importance of using local materials.

Makkuni is particularly interested in reaching out to India's

Opposite page, clockwise from top right: Installations in the Eternal Gandhi Multimedia Museum: a harp that plays Indian freedom songs; a collection of small *charkhas* (yarn-spinning wheels historically associated with Gandhi) presented in an interlocking pattern to suggest togetherness; the "Stambha," an installation that triggers a visual representation of Gandhi's 11 vows necessary to become a "Man or Woman of Truth"; a pot of salt that, when sifted, shows footage of Gandhi's march to the sea; a unity pot.





villages, where traditional practices that have survived for thousands of years are in danger of being lost. The exhibition is now beginning a tour that will take it to rural areas of India, where, in some regions, literacy rates are as low as 20 percent. Bish Sanyal, who teaches development and planning at M.I.T., points out that engaging these audiences requires an ability to communicate in a familiar language. "Color is very important, and also shape," he says. "They may not understand that in order to activate a display, they need to push a button; but they have deep appreciation for craftsmanship. Ranjit's work is very inclusive, and this is an important quality in a country with over a billion people."

To create the Eternal Gandhi exhibition, Makkuni brought in 200 craftsmen from all over India to create interfaces that use traditional materials and colors. The fact that these projects are labor-intensive is part of the point. He hopes to tap into the region's "human resources" and reinvigorate village economies by proving that traditional crafts and modern technology can be combined with results that are simultaneously beautiful and functional. "Less is not always more," he says. "Ornamentation can give the individual a voice in the face of the homogenizing influence of technology." And he hopes that other organizations and companies will follow his example. "Why shouldn't Apple send its laptops to the craft villages of India, Africa, and Southeast Asia to be customized?"

By showing that traditional practices can help to inform modern technology, Makkuni is challenging the conventional wisdom of the country's elite, who often see traditional beliefs as a barrier to modernization. "The big institutions in India have a whole different agenda," says Professor Sanyal. "They too want to help society, but they tend to have a very mechanistic, economic interpretation of how to help—modernization in the Western mode. They want change. They want to move on. And there is very little room for culture."

Makkuni's current projects emphasize shared values and common traditions throughout Asian cultures. An exhibition scheduled to open in late 2007 is titled "The Magic Strings of Saraswati," after Saraswati, the goddess of arts and creativity who typically carries a stringed lute called the *veena*. The show traces the instrument as

it spread throughout India, Burma, Korea, and Indonesia, and was adapted into instruments such as the Indian sitar and the Korean kayagum. Makkuni has traveled across Asia recording performances that will be incorporated into the exhibition and will be triggered by plucking the strings of interfaces representing the various instruments.

One of Makkuni's most ambitious proposals is "The World as Woman Temple," dedicated to celebrating female deities across cultures and religions. "Many objects—such as pots and vases—have feminine attributes," he says. "When used in interfaces, these qualities can inspire feelings of tenderness and compassion." The plan for the exhibition's centerpiece is a bamboo-lacquered sculpture, between 50 and 100 feet long, representing the universal goddess in repose. The sculpture will be decorated from head to toe with depictions of goddesses from different religious traditions.

By incorporating traditional forms and processes into his work, Makkuni hopes to preserve the irreplaceable wisdom that his country has accumulated over generations. Although outsourcing may provide jobs, Makkuni has spent enough time in the West to know that economic prosperity does not always equal inner peace. "There is a certain euphoria about the rate of development," he says. "But let's not get into the idea that technology and globalization will make us all happy and there will be no death and suffering. If you just blindly accept only these external ideas and objects and rely on them to bring you happiness, then sooner or later you are in for a surprise."

If Makkuni's work sometimes creates controversy, he doesn't seem to mind. When the Eternal Gandhi exhibition traveled to Mumbai, India's center of business and finance, Makkuni ordered a traditional mud hut built in the center of the elegant National Gallery of Modern Art. The hut is a simple shelter but rich in symbolism, and it makes efficient use of local materials—in this case, a thick coating of cow dung. "The village mud was now in the middle of a modern museum," he says, chuckling with glee. "Museums often neglect the olfactory, and now the visitors were able to enjoy this beautiful fragrance." **P**

Opposite page, clockwise from top left: For the Gandhi exhibition, Makkuni employed more than 200 local craftsmen; an egg that allows users to interact with installations in "The Crossing"; Makkuni playing the sitar; a painting for the upcoming "The World as Woman Temple" exhibition; an installation from "The Crossing," in which a screen is mounted on a rickshaw.