

JAPAN NATIONAL TOURISM ORGANIZATION PRESENTS:

The Nature of Science

One of MIT's leading Japanese-American Scientists discusses his projects, his upbringing, and all the advantages of planning meetings in Japan

IEEE Spectrum recently had a chance to interview professor Hiroshi Ishii, associate director of media arts and sciences at MIT's Media Lab, one of the United States' leading havens of innovation in the field of communications technology. As a native of Japan, Ishii discussed how his childhood influenced his career path in the field of communication technology, as well as the advantages of Japan as a setting for international meetings.

The Tokyo-born engineer employs a uniquely dynamic approach to the traditionally empirical world of science, favoring artistic interpretations as an alternative to tested pragmatic methods. As the first Japanese faculty member to join the Media Lab team at MIT, Ishii's work continues to be widely recognized not only in the science and engineering worlds, but also in the art and design worlds, earning him praise and accolades from esteemed members of the community.

A Curious Nature

Examining Ishii's work brings forth an observable natural influence as he describes the surroundings upbringing. In an interview with Recruit's Rikunabi-Next, Ishii explains how ambient media first made a lasting impression throughout his youth. "We had an abacus that served as a communication tool between my mother and me. The clicking sounds the abacus made when my mother was using it taught me that it was not the right time to ask her to play with me. This experience led me to com-

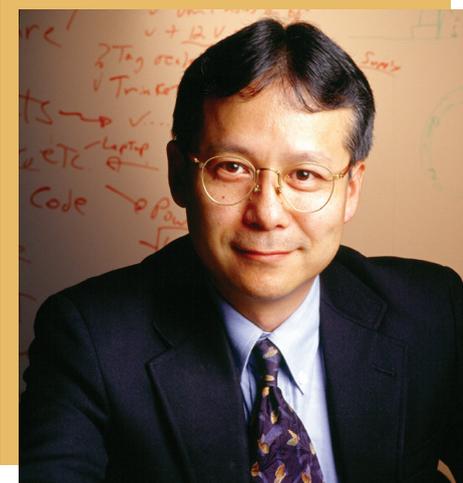
ing up with the concept of "ambient media" in Media Lab."

Ishii adds, "There was a huge impact on me after I touched an abacus for the first time since I was a child, which made me realize that tangible interfaces, such as an abacus, are direct and straight; opposite of graphical user interfaces such as those that are available on personal computers and cell phones."

Ishii would spend his adolescent years traveling all around Japan as he cultivated an appreciation for the arts, architecture, and nature of his home country. He would soon conclude that the aesthetics of Japanese art, architecture, and nature would inevitably influence his work in a profound way.

A Cultural Influence

There is still an undeniable Japanese influence on Ishii's work. When asked about Japan's current role as pioneers of new technological endeavors, he notes that since the land has limited natural resources, its inhabitants have always had to work hard to create new industries based on strong tradition of arts and engineering. For example, Japan has been at the forefront of the semiconductor, electronics, car, and robotics industries, all of which combine strong senses of engineering and aesthetic design. The professor's forward-thinking nature combined with his Japanese roots has introduced unorthodox methods of scientific approaches throughout



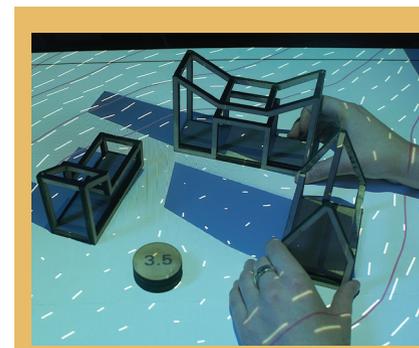
his intellectual circles, an attitude seldom witnessed throughout the tried-and-true practices of the scientific world. His research undoubtedly reflects the elements of his Japanese childhood; traditionally, the Japanese culture as a whole has an intrinsic grasp of the artistic characteristics of the world. It is this kind of balance between man and nature that directly correlates with his work as he attempts to develop a perfect harmony of the physical world and technology. "The balance between the advanced technologies and the beauty of tradition makes Japan very unique." Ishii observes. "Japan takes pride in its unique cultural heritage, yet maintains a cosmopolitan approach to innovation and engineering."

A Balance of Symmetry

The balance between tangible and virtual worlds thus became a juxtaposition that Ishii would examine throughout his career. Tangible Bits, Ishii's vision of human-computer interactions, seeks to eliminate the traditional graphical user interfaces which require screen, mouse and keyboard, to achieve seamless coupling of

physical and digital worlds. In a 2004 article with MIT Spectrum, Ishii notes, "An engineer just makes things work. But the artist asks profound, provocative questions: What feelings does this evoke? How does this relate to the whole? What does it mean? We need to look at the entire picture... Division is dangerous"

It is therefore quite apparent that Ishii's work is more ethereal than purely empirical. The ability to visually represent the environmental impact of a project with his Urban Planning Simulation ("Urp"), for example, evokes not only a practical development but also a certain emotional aspect that causes users to actually see and feel their influence on the urban environment. The Urp takes surface computing to a new level, allowing researchers to manipulate every day objects on a special tabletop that features all relevant data, right at the users' fingertips. So if an architect, for example, wanted to visually represent and alter his designs, material costs, and measurements in one tangible interface, the Urp would provide the space. Similarly, Ishii has further advanced the field of urban and landscape design with his "SandScape" project, wherein users can alter the topography of a sand-based model as the changing variables are captured in real-time by a laser scanner mounted above it. The ability to manipulate such a dynamic material while simultaneously logging its computational data has had tremendous positive ramifications on the efficiency and perspective modern urban design, which can be partly attributed to Ishii's application of nature in technology.



The Urban Planning Simulation ("Urp") allows users to manipulate physical building models to explore shadow and wind flow.



The SandScape allows users to design landscape manipulating sand-based topography and simulating shadow, water drainage, and other aspects.

A Nucleus of Commerce

Since more than a dozen companies in Japan sponsor MIT Media Lab, Ishii returns to his home country three to four times a year to attend meetings and conferences. "Too many great international conferences organized by IEEE and ACM are happening in Japan, and I wish I could attend them all", Ishii says. "I often attend those conferences to give keynote speeches, and I always enjoy their hospitality and high standard of professional services. The extensive, efficient public transit system makes it easy to navigate from one venue to the next in large cities. You can easily find the best route and estimated time to travel with trains and subways using online web service."

As media research and development continues, Japan has undoubtedly emerged as a capital of technological innovation. "At conferences in Japan one is able to enjoy the fruits of international collaboration and ingenuity while appreciating how local influences have shaped the course of Japanese engineering industries."



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Tokyo Night Cityscape with Mt. Fuji in the background



Kanazawa Castle in Winter