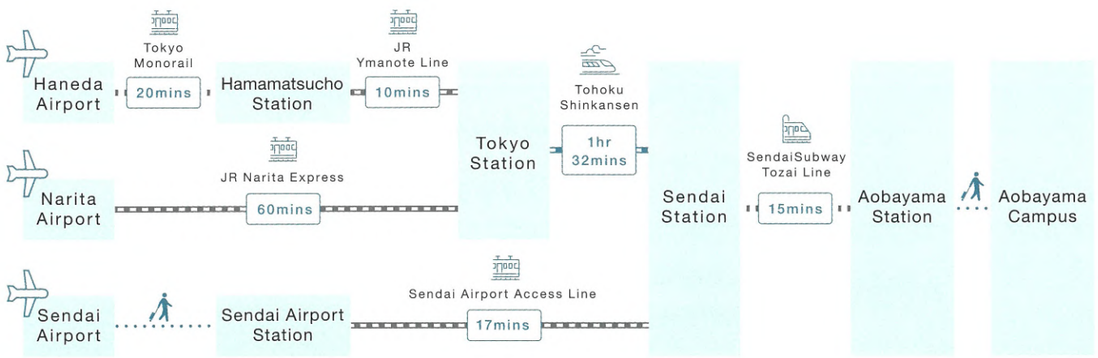
Sendai, the home city of Tohoku University

SENDAI At a Glance

Average Temp. 12 ℃

Precipitation 1241 mm

Sunshine 1843 hours



Tohoku University Research News of Engineering

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Tune

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07
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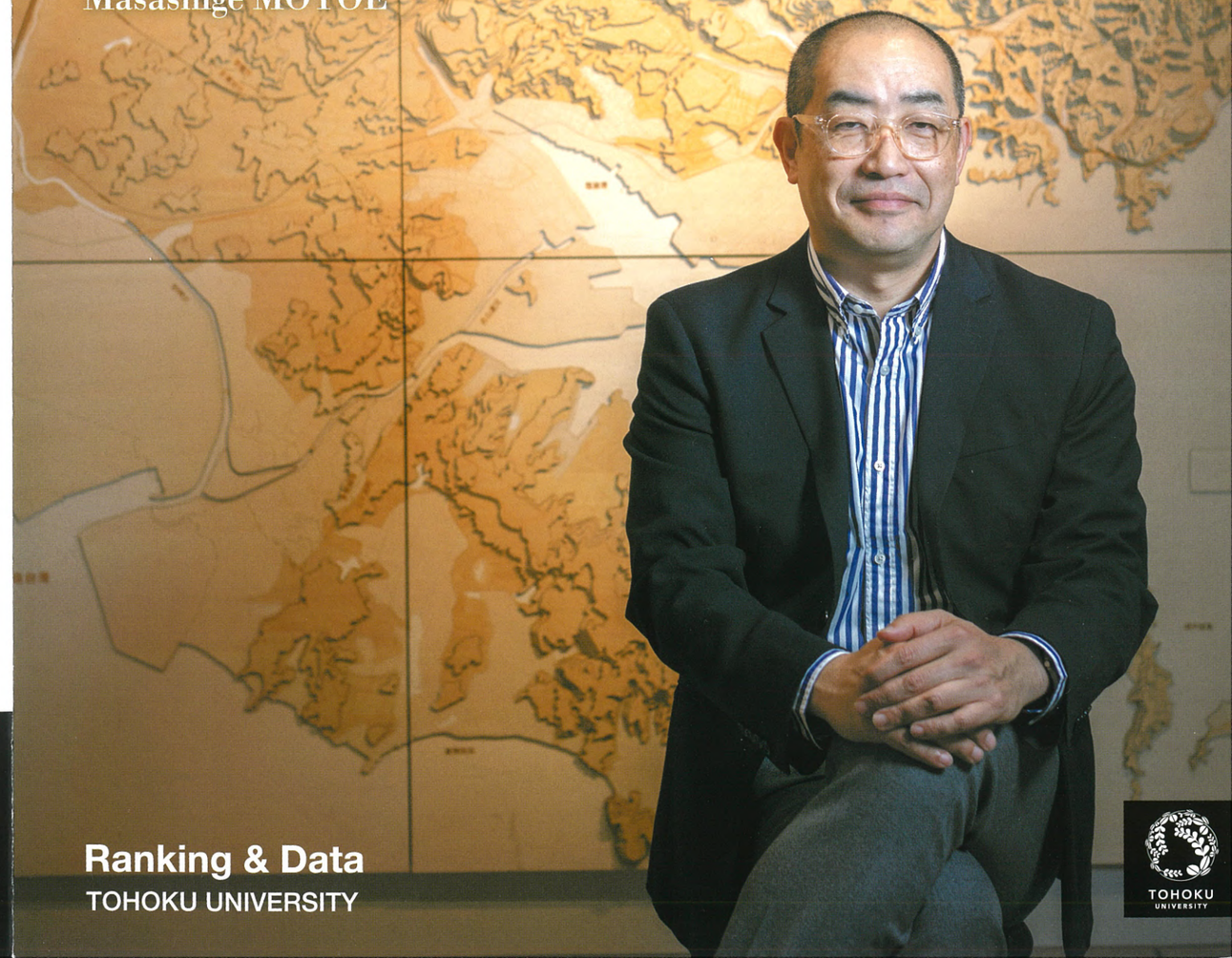
Providing (subtly) is Preventing

Tohoku University Graduate School of Engineering
Associate Professor
Masashige MOTOE



Ranking & Data

TOHOKU UNIVERSITY

Providing (subtly) is Preventing

Text by Stophe POMEROY / Photographs by Hayato IKEGAMI

There is an old English maxim: "Providing is preventing." Associate Professor Masashige Motoe of Tohoku University, Graduate School of Engineering (GSE), who heads the GSE Field Design Center (FDC), sees the need to take this saying to heart. The architecture/environment researcher seeks to have urban habitats fitted with necessities for mitigating disasters.

The Tohoku region has a long history of resiliency recovering from all types of catastrophe, natural and otherwise. In particular, Sendai — located alongside the typhoon-visited Pacific Coast as well as the Japan Trench (where tremor-causing tectonic plates converge) — exemplifies a city which remembers well the lessons learnt from past ordeals.

Nevertheless, along with the passage of time people living in calamity-prone areas forget the fear, anxiety and sense of urgency that made them keenly aware of their precarious existence. Thus, a recurrent reminder which gently nudges them to have provisions handy has been designed into everyday life for adoption by those who may possibly become disaster-stricken.

Masashige MOTOE, Associate Professor, Department of Architecture and Building Science, Graduate School of Engineering, Tohoku University

1989 Bachelor's Degree, the University of Tokyo; 1993 Doctoral course interrupted, Department of Architecture, Graduate School of Engineering, the University of Tokyo; 1993-2001 Research Associate, the University of Tokyo; 2001-2005 Lecturer, Miyagi University 2005 Ph.D., Environmental Studies; 2006- Associate Professor, IT Communication Lab at Department of Architecture and Building Science, Graduate School of Engineering, Tohoku University; 2010-2014 Principal, Sendai School of Design; 2015-present Director of Field Design Center, Graduate School of Engineering, Tohoku University.

"Stealth" for Combating Disasters

Stophe Pomeroy (SP): *You have given your answer to meeting disaster conditions the name "Stealth Approach*." Why this naming and what is the concept behind this?*

Associate Professor Masashige Motoe (MM): The word "stealth" is often used to mean not being easy to detect, though imagewise it might appear to have negative connotations, too martial-sounding. However, the word also brought to mind the status of a technology under development while awaiting completion of the patenting process.

Tohoku University is situated in a Japanese region which has been plagued with a variety of problems ranging from big earthquakes and devastating tsunamis to agricultural adversities and weather issues. Perched on Japan's Pacific shoreline, the city of Sendai particularly highlights the role of citizenry in view of the long history of coping with worst-case conditions.

Here, I saw a need to offer potential disaster victims a recurrent yet unobtrusive reminder that subtly nudge preparedness through design, rather than constantly prodding them with fear. Emergency food supplies hidden away in neat cubbyholes, easy-to-carry kits for use upon evacuation in proximity of the desk, fireproof curtains useful in smothering fires... all would fit the description.

Making Use of Wealth in Experience

SP: *So, you mean we can make better use of knowhow accumulated from the past if designed properly?*

MM: Indeed, the idea is to enhance the efficacy of measures available in countering ill effects of widespread damages such as evacuation orders. Though it would be a panic-conducive scene, if there is a readily-available plus simple set-up that could expedite a quick exit while allowing vital documents, etc. to be secured, a smooth flow would be realized — the wall-hanging carrying case we produced is a case in point**.

We are also prototyping cushions that contain (potable) water, these can during uneventful times be placed on couches and baby cribs. The carrying case can hang next to the calendar, transformed into an integral part of everyday scene at work or in the home. Speaking of calendar, as for emergency goods, seasonal gift packs can have extra compartments added so such gifts as replacement for time-sensitive items could be provided.

Building a Healthy Community

SP: *As a stable platform upon which to "install" the designed system components into normal daily life, I assume community support is a must?*

MM: "Inclusion" is a core idea. Henceforth, we can foresee an increase in disasters worldwide that will require improved readiness at the community level. Since communication and coordination capabilities are crucial during urgent times, we are applying past knowhow in order to upgrade localized functions structurally. Evacuation drills, interface sessions (in various forms) and suchlike would help reinforce said functions.

SP: *And for this a healthy community spirit needs to be nurtured....?*

MM: By happenstance, the FDC has previously collaborated with IT-related companies, thereby giving it an insight into interaction among people. Because being well-organized entities will hold the key to the resiliency of potentially-impacted groups, we hope to continue realizing new design as well as engineering schemes that will improve the status quo in preparation of future risks, not to mention imbuing the community with the spirit required in overcoming hardships.

SP: *Concerning the Stealth endeavor, it is part of Tohoku University International Research Institute of Disaster Science (IRIDeS)-NTT 'Vision-Sharing Joint Research' effort currently in place.*

* The "Stealth Approach" to disaster prevention was born from collaborative activities between FDC and Nippon Telegraph and Telephone Corp. (NTT).

** Wall-mounted "pockets" comprise a stable platform through which the designed system components are melded into people's lives.

Ranking & Data

TOHOKU UNIVERSITY

Researcher Datebase http://.db.tohoku.ac.jp/whois/TunvTopE.html

University Ranking

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36 Reuters Top 100: The World's Most Innovative Universities 2018

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QS QS World University Rankings by Subject 2020

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ARWU ShanghaiRanking's Global Ranking of Academic Subjects 2019

- 4 Metallurgical
- 76 Mechanical Engineering
- 101 Electrical & Electronic Engineering

Statistics 2019

	Tohoku University	School of Engineering
STUDENTS-TO-FACULTY RATIO	1 : 6	1 : 9
NUMBER OF FACULTY	3,152	612
NUMBER OF INTERNATIONAL STUDENTS	2,162	593
UNDERGRADS	10,814	3,489
GRAD STUDENTS (MS)	4,385	1,544
GRAD STUDENTS (PhD)	2,605	502