

# NTT DoCoMo, Inc. MOBILE SOCIETY RESEARCH INSTITUTE INTERNATIONAL ARCHITECTURAL DESIGN COMPETITION 2006

# PUBLIC SPACE

# FOR

# AMBIENT

# INTELLIGENCE



NTT DoCoMo, Inc. Mobile Society Research Institute International Architectural Design Competition 2006

## theme: Public Space for Ambient Intelligence

Sponsor: NTT DoCoMo, Inc. Mobile Society Research Institute  
Supporter: Shinkenchiku-sha Co., Ltd.

What new kinds of public space exist in a society sustained by ambient intelligence (ubiquitous computing)?

Public spaces are places for communication between people and things.

What public spaces appear when new communications have arisen in a society that has developed ubiquitous computing technology (ambient intelligence)? We are calling for proposals for these immanent new spaces.

A “mobile” is not limited to the function of making telephone calls, but has come to be used for communication between person and person, between person and thing, between thing and thing, and its appearance has undergone great changes. As a result, it is a personal surrogate that enables a variety of services and communications with things. Taking the “mobile”

as a new communication tool, its current form is perhaps incongruous.

We hope to receive proposals for new social values in a “mobile” society, with a comprehension of future changes in technology and society after, for example, ten years (further developments in mobile phone services and the Internet, population problems such as population increases, declining birthrates and a growing proportion of elderly people, the state of the family, the state of local societies, energy problems, changes in the global economy, environmental problems, etc.)

Moreover, we hope for the creation of a new communication culture with reference to the current state of new ubiquitous computing technologies, yet with spatial ideas that are not confined by this.

## ケータイ空間デザインコンペ2006

<b>審査委員</b>	
<b>課題出題・審査委員</b>	徳田英幸 慶應義塾大学 政策・メディア研究科委員長・環境情報学部教授 (株) NTTドコモ モバイル社会研究所 理事
<b>審査委員長</b>	隈研吾 隈研吾建築都市設計事務所代表 慶應義塾大学教授
<b>審査委員</b>	西沢立衛 西沢立衛建築設計事務所代表 横浜国立大学大学院助教授

<b>賞金</b>	
<b>最優秀賞</b>	1点 200万円
<b>優秀賞</b>	2点 各50万円
<b>佳作</b>	7点 各10万円 <small>(すべて税込, 賞金総額370万円)</small>
入賞者には2007年3月上旬開催予定の「モバイル社会シンポジウム2007」(主催: モバイル社会研究所)でプレゼンテーションをしていただけます。コンペ応募者の皆さんには、入賞作品のプレゼンテーションを視野に入れたアイデアを積極的に表現していただくことも期待しています。詳細は入賞者決定後にお伝えいたします。	

## NTT DoCoMo, Inc. Mobile Society Research Institute International Architectural Design Competition 2006

<b>Jury members</b>	
<b>Coordinator, Jury member</b>	Hideyuku Tokuda chairperson, graduate school of media and governance, Keio University director, NTT DoCoMo, Inc. Mobile Society Research Institute
<b>Head of jury</b>	Kengo Kuma principal, Kengo Kuma & Associates; professor, Keio University
<b>Jury members</b>	Ryue Nishizawa principal, Ryue Nishizawa & Associates; assistant professor, graduate school, Yokohama National University

<b>Prizes</b>	
* First prize:	1 work: ¥2 million
* Second prize:	2 works; ¥500,000 each
* Honorable mentions:	7 works; ¥100,000 each
<small>(All including tax. Total purse: ¥3.7 million)</small>	
Prize-winners will present their works at the "Mobile Society Symposium 2007" (sponsor: Mobile Society Research Institute) scheduled for early March 2007. We also hope that all competition applicants will actively express their ideas with a view toward their presentation as prize-winners. Details will be given after the prize-winners have been chosen.	

## ケータイ空間デザインコンペ2006

## 課題: ユビキタス社会のパブリックスペース

主催: 株式会社 NTTドコモ モバイル社会研究所  
後援: 株式会社 新建築社

ユビキタスに支えられた社会の新しいパブリックスペースとはどのようなものでしょうか。

人やモノのコミュニケーションが起こる場所としてパブリックスペースがあります。ユビキタス技術が発展した社会になり、新しいコミュニケーションが生まれた時、どのようなパブリックスペースが現れるのか。そこに新たに立ち現れるパブリックスペースの提案を募集します。

「ケータイ」は通話機能だけではなく、人と人、人とモノ、モノとモノのコミュニケーションに使われるようになり、そのあり方を大きく変えています。それにより、あなたに代わって、さまざまなサービスやモノとのコミュニケーションを可能にして

登録・作品提出締切  
2006年12月8日(金)  
作品を持参の場合は正午まで。送付の場合は当日消印有効。

**登録方法**  
本コンペに参加するためには、事前に下記のホームページ上の登録フォームから登録を行ってください。必要事項を記入すると後ほどe-mailで登録番号が交付されます。この登録番号は応募にあたって必要となりますので各人で記録し保存してください。

<http://www.japan-architect.co.jp/docomo/2006/>  
\*応募規定の詳細についても上記ホームページをご覧ください。  
\*交付後の登録番号に関する問い合わせには応じることができません。  
\*応募登録はこのホームページ以外からはできません。

**発表**  
審査の結果は入賞者に通知するとともに、『新建築』2007年3月号、『a+u』2007年3月号、および当コンペホームページ上にて発表いたします。

株式会社 NTTドコモ モバイル社会研究所  
<http://www.moba-ken.jp/>  
株式会社 新建築社  
<http://www.japan-architect.co.jp/>

**Deadline for registration and submission of work**  
December 8, 2006 (Fri)  
Works brought directly will be accepted until noon; mailed works must reach competition office no later than December 8, 2006 (Fri).

**Registration method**  
To enter this competition, persons must first register on the below homepage. A registration number will be issued by e-mail after the registration form has been properly completed. Each applicant should keep a record of this registration number, as it will be needed for entering the competition.

<http://www.japan-architect.co.jp/docomo/2006/>  
\* No inquiries regarding the registration number will be accepted once the number has been issued.  
\* Registration for the competition will take place only on the homepage.

**Announcement**  
Prize-winners will be notified of the results of the jury, which will also be announced in the March 2007 issues of "Shinkenchiku" and "a+u" and on this competition's homepage.

NTT DoCoMo, Inc. Mobile Society Research Institute  
<http://www.moba-ken.jp/english/index.html>  
Shinkenchiku-sha Co., Ltd.  
<http://www.japan-architect.co.jp/>

**Discussion: Hideyuki Tokuda × Kengo Kuma × Jun Aoki × Ryue Nishizawa**  
**NTT DoCoMo, Inc. Mobile Society Research Institute International Architectural Design Competition 2006**  
**Public Space for Ambient Intelligence**

## What does “ubiquitous” mean? – Public space altered by new types of communication

**ケータイ空間デザインコンペ2006**
 **ユビキタス社会のパブリックスペース**  
**ユビキタスって何?——新しいコミュニケーションが変えるパブリックスペース**  
**対談：徳田英幸×隈研吾×青木淳×西沢立衛**

東京の丸の内線有明駅に設置された「ユビキタス」のセンサー。

**The transformation toward communication between things**

**Hideyuki Tokuda:** The mobile phone began as the car phone, which changed into the mobile phone, and then changed into the more widely used *keitai* (the Japanese term for portable phone). Having undergone further evolution, it has now come to be used instead of a credit card or a train ticket. There is something known as “paintable computing,” for interactions between space and information. Computer chips are mixed in with paint, and applying this will construct a surface network – so if the wall cracks, for example, that information can be instantly sensed. The former 20th century-style Internet did not go beyond connecting computers, mobile phones, and PDAs, but in a society permeated by ubiquitous computing technology, every non-IT thing – such as cups or tables or floors – may be seamlessly connected with a computer network. We can consider the forms of this interaction. However, even looking at the prizewinning entries from last year's competition, they mainly seemed to be thinking about the old style of *keitai*. They did not think about a dog with a *keitai*, or attaching it to a door, or attaching it to a car.

Looking toward the future of ubiquitous computing, in this competition I want the entrants to think about not only communication between a person and a person, but also between a person and a thing, and a thing and a thing.

**Kengo Kuma:** Communication between a thing and a thing, has not really been conceptualized, so this seems very fresh.

**Jun Aoki:** When saying “*keitai*,” we are not imagining a mobile phone, but instead more interesting proposals for a wider range of things. When the personal belongings surrounding you are incorporated into a network condition, what kind of architectural space may be conceived? It is more interesting to think like this. Slightly wider settings were also done last year, with a *keitai* as not only a phone, but they were thought of as no more than an extension of the so-called *keitai*. Finally, we were left with many analytical projects, right? And many of these were immediate suggestions for development of the *keitai*. I think what we had hoped for was a little different. The presence of *keitais* alters the urban structure. The concept of the city has changed, so I think we should see physical changes at the urban planning level.

**Visualizing unseen things, and the comprehensibility of space**  
**Tokuda:** Ken Sakamura, who is researching ubiquitous computing, has been carrying out experiments in Kobe for the visually impaired. Inserting electronic tags into the raised yellow tiles that are used in public places for the visually impaired, this is voice recognition using a *keitai* that can decode them with a reader at the tip of a white cane.

As such research makes rapid progress, a cane is still a cane, or a cup is still a cup, but they now have ubiquitous computing functions. Whether or not they have a chip inside cannot be understood from their appearance.

Conventional IT is used for the empowerment of people,

東京の丸の内線有明駅に設置された「ユビキタス」のセンサー。

organizations, and communities, but because the prices of computers and chips have fallen I think they will soon come to be used for the empowerment of spaces and environments. At the recent 50th anniversary of the Shinjuku Imperial Gardens, Keio University SFC’s Mikiko Ishikawa Laboratory and Tokuda Laboratory did a joint visualization of the environment of the Shinjuku Imperial Gardens. The students arranged about 160 small sensor nodes to monitor the space. The sensors were at a spacing of several meters, and although only readable by people with significant knowledge and experience, doing this allowed the distribution of temperature changes in the park to be understood at a glance.

As one aspect of ubiquitous computing, enabling this kind of hitherto-invisible thing to be seen is upsetting to those people who are trying to conceal it. For instance, if we set up sensors for vehicular exhaust emissions, this will push forward information with a clarity that goes beyond conventional phrases.

**Aoki:** One direction of ubiquitous computing is the visualization of unseen things. Even if this is substituted for an existing architectural space, "comprehensibility" might be a keyword. Up until now, visibility was the major issue in the comprehensibility of the city. In other words, to avoid becoming lost, it was important to see the streets clearly, without obstructions. The city then becomes geometrical. However, if we are in a state where we can use ubiquitous technology to monitor where we are and where we want to go, visual comprehensibility becomes unimportant. Many architectural spaces give consideration to visual comprehensibility, but I think that in the next era, the definition of comprehensibility will change even inside architecture. In short, architectural space itself will change.

**Tokuda:** What we are using in our experiments is a sensor named uPart, which was developed at Karlsrühe University in Germany. At MIT, a sensor named MITes (MIT environmental sensor) is being developed. By installing these in every place in a house, in cupboards and lids, a history of the inhabitants’ activities is extracted, and personal activity recognition data is collected. Although there has previously been monitoring of disasters and specific activities, in general all the activity history of the test subjects was recorded for 2-3 weeks, and that logged information was not publicly disclosed. Based on this data, researchers all over the world will be able to make comparative studies of the algorithms for activity recognition.

It used to cost a great deal to do these experiments, but now that sensors can be cheaply obtained we can do things we couldn’t do before.

However, it is true that some people despise this kind of monitoring. In technology, areas of light and shadow inevitably appear. The Japanese Ministry of Public Management, Home Affairs, Post and Telecommunications has also been thinking about guidelines, but they have only just begun discussions about such sensors and surveillance cameras.

For choosing the theme of the competition, this discussion was held with a coordinator of this competition and jury members of 1st DoCoMo International Architectural Design Competition 2005.

この座談会は、今回のコンペのために、課題出題者と2005年の第1回 DoCoMo" ケータイ空間 " デザインコンペの審査員にお願いした。

東京の丸の内線有明駅に設置された「ユビキタス」のセンサー。

**モノとモノのコミュニケーションへの変化**

**徳田英幸**（以下、徳田）：携帯電話は自動車電話としてスタートして、それが携帯電話へと変わり、より広汎に使われるケータイへと変わってきました。今、さらに進化したて、クレジットカードや電車の切符代わりにもなっています。情報と空間のインタラクションにペインタブルコンピューティングというものがあります。塗料の中にコンピュータチップが混ざっていて、これを塗るとその面のネットワークが構築され、たとえば壁が割れると情報が瞬時にセンシングできるというものです。今までの20世紀型のインターネットは、コンピュータやケータイやPDAが繋がっているに過ぎなかったのですが、ユビキタス技術が浸透した社会では、あらゆる非IT的なもの、たとえばコップやテーブルや床なども、シームレスにコンピュータのネットワークに繋がるようになるでしょう。

こうしたより広いインタラクションのあり方が考えられるようになっていきます。しかし、今年のコンペの入賞案を拝見しても、ケータイを持っている「人」と「人」のコミュニケーションがメインに考えられていて、古いケータイのスタイルだけから考えられていると思いました。犬がケータイを持ったり、ドアに付いたり、車に付いたりということは考えられていません。

今回のコンペで考えてもらいたいのは、ユビキタスの将来を見据えた、人と人だけではなく、人とモノ、モノとモノのどのコミュニケーションです。

**隈研吾**（以下、隈）：モノとモノのコミュニケーションというのは、あまり発想したことがなかったので新鮮ですね。

**青木淳**（以下、青木）：ケータイと言った場合に、ケータイ電話をイメージするのではなくて、もっと広がりのあるものとして考えた方がおもしろい案が出てきそうですね。身の回りを取り囲んでいるモノがネットワークに組み込まれた状態の時に、どんな建築空間が考えられるか。そう考えた方がおもしろい。

昨年もケータイを電話だけではなくてもう少し広い設定にしているのですが、いわゆるケータイの延長線上でしか考えられていなかった。最後に残ったのは分析的なものが多かったですね。それと、すぐ思い付きそうなケータイ電話の展開が多かった。僕たちが期待したのは、もうちょっと違ったことだったと思うのです。ケータイがあることで、都市構造が変わる。部分の変化ではなく、都市という概念が変わってしまい、都市計画レベルの物理的変化が見られるだろうと思ったのです。

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**見えないものの可視化と空間の分かりやすさ**

**徳田**：ユビキタスの研究をしている坂村健さんは、神戸で視覚障害のある方のための実験をしています。黄色い点字ブロックに電子タグを組み込んで、白い杖の先にリーダーがあり、それを読み取ってケータイで音声として認識するものです。

こうした研究がどんどん進んでいくと、杖は杖のまま、カップはカップのままユビキタスの機能を持つようになる。見た目にはチップが入っているかどうか分からない。

東京の丸の内線有明駅に設置された「ユビキタス」のセンサー。

ルの粒度でセンシングできたのですが、そうするとかなり経験と知識を持った人しか分からなかった公園の温度変化の分布が一目に分かったのです。ユビキタスの一面として、このように今まで見えなかったものが見えるようにできるので、隠そうとする人には嫌がられますね。たとえば排気ガスをセンシングしたとすると、これまで言葉で言っていた以上に明確な情報が突きつけられます。

**青木**：ユビキタスのひとつの方向に見えないものの可視化があるのですね。それを既存の建築空間に置き換えても、「分かりやすさ」はひとつのキーワードでしょうね。これまで、都市の分かりやすさのためには視覚的なことがもっとも重要な問題でした。つまり迷わないためには通りを見通せるとか、アイストップがあるといったことが重要だったのです。そうすると都市は幾何学的なものになってくる。でもユビキタス技術で自分が今どこにいるとかどこに行きたいとかがモニタリングできる状態になると、視覚的な分かりやすさは重要ではなくなる。多くの建築的な空間は視覚的分かりやすさを考えていると思いますが、次の時代には建築においても分かりやすさの定義が変わってくると思います。つまり建築の空間自体が変わるということです。

**徳田**：われわれが実験に使ったのは、ドイツのカールスルーエ大学が開発したuPartというセンサーです。MITでは、MITes (MIT environmental sensors) というセンサーが開発されています。これを住宅のあらゆる場所、戸棚や蓋などに取り付けて、住人の行動履歴を取り出して、人の行動認知(アクティビティ・レコグニション)用のデータを収集しています。これまで、災害時や何か特定の行動をモニタリングすることはありましたが、普通に被験者を2〜3週間くらい住まわせて、行動履歴をすべて記録し、それらのログ情報を公開するというのはありませんでした。これらのデータを元に世界中の研究者が行動認知のアルゴリズムを比較検討できるのです。こんな実験をしようとするところまではものすごくコストがかかったのですが、センサーが安く手に入ることで、これまでできなかったことができるようになったのです。

ただ、こうしてモニタリングされることに嫌悪感を持つ人もいるのは事実です。技術にはどうしても光と影の部分が出てきます。日本の総務省もこれらのガイドラインを考えているのですが、監視カメラやこうしたセンサーについては、まだ議論が始まったところです。

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**新しいネットワークとパブリックスペース**

**西沢立衛**（以下、西沢）：僕たちが建築を設計している時は、ソフト的なこと（プログラムなど）がどれだけハードな建築を変えることができるかを考えていると思うのです。たとえば新しいオフィスというプログラムができると、それに応えるには超高層のビルじゃないとダメだとか、平屋で広いスペースじゃないとダメだとかを考える。ハードを考える。でも今の徳田さんの話を伺うと、モノの形は現状にあるものですべて解決できてしまう。でもそこをどのようにしてモノの問題にもっていき、

見えないものとの関係をつくるかにひとつのチャレンジがありますよね。

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**New networks and public spaces**

**Ryue Nishizawa:** When designing architecture, I think we are considering to what extent software-like things (program etc.) can be transformed into the hardware of architecture. For example, in response to a new program for an office, we consider whether it has to be a skyscraper, or whether it has to be a single-story open space. This is thinking about hardware. But listening to what Mr Tokuda has been saying just now, the shape of anything can be resolved using things that currently exist. But addressing the problem of any given thing, one challenge is to make relationships with unseen things.

On the other hand, even if we pay no attention to making unusual shapes, it is perhaps worth attractively depicting new network conditions. For example, using only existing things while human relationships are undergoing great changes, etc.
**Tokuda:** Among our colleagues are people researching signs that light up if the reader at a train station ticket gate is scanned (*Suica* of JR East), in order to tell people which direction they should go. What we are thinking of is not something so direct, but more like making the direction known with an eye marker that will be understood by only the person going through the ticket gate. This is merely an example, but it seems interesting to make public space the theme.

**Aoki:** Each person perceives public space differently, so differentiating by building type, taking a train station for example, also gives different expectations, right?

**Tokuda:** The Ministry of Public Management, Home Affairs, Post and Telecommunications is undertaking various concrete experiments with ubiquitous technology. For instance, using active electronic tags as guides for people visiting theme parks. Or waterproof electronic tags that can be used when taking a bath at a “*super-sento*” (large-scale Japanese public baths). You can also do all your shopping if you have one of these. These kinds of electronic tags and tag readers have also been incorporated in mobile phones.

**Nishizawa:** I think that public space is a good theme. It is an abstract but broad concept, although it would be good to make reference to what we have been discussing up until now. It is a theme that we have all conceived. This is also the case when looked at from the architectural aspects, or from the information technology aspects. By applying some kind of phrasing in advance, it is as if we are thinking about a public space different from what has been made before. However, if we just say it is a ubiquitous public space, ultimately what is that? Perhaps it’s something unimaginable. (laughter).

**Kuma:** It is necessary to think very precisely about the word ubiquitous. Even we are vaguely shown a variety of technologies, I do not think we will understand how they relate to the competition. It is necessary to precisely explain the intended significance of the technology. No matter how many diverse written reports we read, somehow they do not readily connect to the designs.

**Nishizawa:** I also think the word ubiquitous is vague, I didn’t understand it very well, but I think today I have finally understood.

**Aoki:** In this competition, we certainly don’t want merely analysis and computer terminal designs. If we don’t say that up front, we’ll probably just get similar results to last year.

**What is ubiquitous society?**

**Aoki:** Although I still don’t have a clear image of what a ubiquitous society is, can we understand that the things Mr Tokuda has been talking about will lead to a ubiquitous society?
**Tokuda:** Yes, that’s right. Japan’s information strategy began

with "e-Japan." This was intended to promote broadband usage. As a result, the basic infrastructure was completed. Next, without promoting cultural aspects, "e-Japan phase 2" was made as an application for the use of information technology. In concrete terms, this comprises "e-Government," "e-Banking," and "e-Commerce." On the net, you can do administration procedures, bank transfers, shopping, and services in information space. We are pushing this kind of IT solution as a social solution. We want to provide a public service.

So if broadband spreads, and mobile communication networks spread to every corner of society, where is the next telecommunication paradigm going? Rather than being connected to a network with only one piece of electric equipment, a society should also become linked with non-IT things. In Japan, this policy is called "u-Japan."\* The "u" has four meanings: "universal," "ubiquitous," "user-friendly," and "unique." By connecting everything in a seamless network, our social problems may be resolved. The keywords are "whenever", "where ever", "whoever", and "whatever."

In Latin “ubiquitous” refers to omnipresence (of the gods). Since the early days when each computer was independent, personal computers have spread, and further have become networked, miniaturized, and ubiquitous.

**Ambient technology**

**Tokuda:** As an example of smart furniture, we have developed a stand lamp that can display 256 colors, which is a smart lamp. On the other hand, the MIT venture company Ambient Device Technology Inc. has commercially produced a smart lamp in which the color is synchronized with stock prices. For people who don’t know this information, it just looks as if the color is changing, but for people who know, they understand its meaning. Therefore, its ordinary role is not hindered. In the current model, the communication of information it is either a “pull” model, as in clicking for information on the World Wide Web, or a “push” model as in when e-mail is sent to you, but it could be said that ambient technology occupies a state in the middle.

**Aoki:** If you want to read it, you can just read it, right?

**Tokuda:** That’s right.

Researchers at the MIT Media Lab were leaning toward bit (information) space for a certain period of time. Afterwards, they leant toward atoms, but each was an oscillation toward being able to build anything, anywhere. This is called “personal fabrication” by Neil Gershenfeld’s team at the MIT Fab Lab. It involves the establishment of a lab that could make anything, to provide the things that are necessary in various countries.

**Kuma:** Can it actually make things?

**Tokuda:** It can. They make various things, such as clothing, furniture, portable personal spaces, and electronic toys.

**Kuma:** This is something enabled by computers, right. What kind of system is it?

**Tokuda:** Personal fabrication means making almost anything, employing tools such as 3D modeling machines, small cutting machines, and CAD software, and giving a new literacy to individuals. By uniting it with ubiquitous technology, the ways of making have also evolved.

**Aoki:** To put it in terms of this competition, in practice various technologies are now being enabled, but it is probably uninteresting to engage these directly. For example, it might be better to imagine 10 years from now, or even just slightly into the future.

*Translated by Thomas Daniell*

(July 4, 2006, NTT DoCoMo, Inc. Mobile Society Research Institute)

\*u-Japan Policy   [http://www.soumu.go.jp/menu\\_02/ict/u-japan\\_en/index.html](http://www.soumu.go.jp/menu_02/ict/u-japan_en/index.html)

**Hideyuki Tokuda**



Born in Tokyo in 1952. Received B.S. and M.S. degrees from Keio University, Japan in 1975 and 1977 and Ph.D. degree in Computer Science from the University of Waterloo in 1983. 1983-1990 Senior Research Computer Scientist at Computer Science Department, Carnegie Mellon University. Executive Vice President and CIO of Keio University 1997-2001. Currently a Dean of the Graduate School of Media and Governance and a Professor in the Faculty of Environmental Information, Keio University Japan and Director of NTT DoCoMo, Inc. Mobile Society Research Institute.

**Kengo Kuma**



Born in Kanagawa Prefecture in 1954. Completed the Master Course, Department of Architecture, Graduate School of Engineering, University of Tokyo in 1979. Visiting Scholar Graduate School, Columbia University and Asian Cultural Council 1985-1986. Established Spatial Design Studio in 1987. Established Kengo Kuma & Associates in 1990. Professor at the Faculty of Environmental Information, Keio University 1998-1999. Professor at the Faculty of Science and Technology, Keio University 2001-.

**Jun Aoki**



Born in Kanagawa Prefecture, Japan in 1956. Graduated from Tokyo University in 1980. Completed the Master Course of Architecture in 1982. Worked at Arata Isozaki and Associates 1983–1990. Established Jun Aoki & Associates in 1991.

**Ryue Nishizawa**



Born in Tokyo in 1966. Graduated from Yokohama National University in 1988. Completed the Master Course, Yokohama National University in 1990. Worked at Kazuyo Sejima & Associates. Started collaboration with Kazuyo Sejima (SANAA) in 1995. Established Office of Ryue Nishizawa in 1997. Currently associate professor at Master Course of Yokohama National University

がる社会になるでしょう。その政策を日本では「u-Japan」\*と言います。この「u」は「ユニバーサル(Universal)」、「ユビキタス(Ubiquitous)」、「ユーザーフレンドリー (User friendly)」、「ユニーク (Unique)」など4つくらいの意味からきています。あらゆるものがシームレスにネットワークに繋がることで、われわれの社会的な問題を解決しようというものです。「いつでも」「どこでも」「誰でも」「何でも」がキーワードです。ユビキタスというのはラテン語で、(神々が)至るところに遍在するという意味です。初期のコンピュータが1台独立してあった頃から、個人用のパソコンに広がり、さらにネットワーク化、小型化されて、ユビキタスになるのです。

**アンビエントなテクノロジー**

**徳田：**私たちは、スマートファニチャのひとつとして、スマートランプなる256色表示できるスタンドランプを開発したことがあります。一方、MITのベンチャー企業でアンビエント・デバイス・テクノロジー・インクが株価に連動して色が変わるスマートランプなどを商品化しています。その情報を知らない人には単に色が変わって見えるだけなのですが、知っている人には意味が分かるというものです。だから通常の仕事を邪魔しません。情報のやりとりは、今のインターネット上のウェブ情報をクリックして取りに行くプル型か、メールがやってくるようなプッシュ型かどちらかなのですが、アンビエントなテクノロジーはその中間の状態と言えます。

**青木：**読み取りたいければ読み取ればいい、というものですね。

**徳田：**そうですね。MITメディア・ラボの研究者たちが一時期ビット（情報）空間の方に振れたことがありました。その後アトムの方角、それぞれがどこでも何でもつくれるようになるろうという揺り戻しがあった。それがMITファブ・ラボ (Fab Labs) のニール・ガーシェンフェルドらがやっているパーソナル・ファブ리케이션です。さまざまな国で必要なものを何でもつくれるようにラボを設置していったんです。

**隈：**実際につくるんですか？

**徳田：**つくります。洋服や家具から携帯用パーソナルスペース、電子おもちゃなど、いろんなものをつくります。

**隈：**それはコンピュータがあるからできることなんですね。どんなシステムなんですか？

**徳田：**パーソナル・ファブ리케이션は、3Dモデリングマシン、小型カッティングマシン、CADソフトなどのツールを駆使し、ほぼあらゆるものをつくり出せるといった、新しいリテラシーを個人に与えていくといった意味があります。ユビキタス技術との融合によって、ものづくりのあり方も進化してきているんです。

**青木**　このコンベに関して言うと、今、実際にいろんな技術ができてつありますが、それに直接対応したものだとつまらないかもしれないですね。たとえば10年先とか、ちょっと先の未来のことをイメージしてもらった方がいいですね。

(2006年7月4日、NTT ドコモ モバイル社会研究所にて)

<sup>[1]</sup> 総務省u-Japan政策 (http://www.soumu.go.jp/menu\_02/ict/u-japan/index.html)