

「まほろば」の 街づくりをめざして。

Aiming at the Creation of Mahoroba Cities



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1937年、富山県生まれ。早稲田大学名誉教授、社団法人都市環境エネルギー協会理事長、財団法人建築保全センター理事長、アジア都市環境学会理事長、日本景観学会会長（現職）、東京大学客員教授、日本建築学会会長、早稲田大学理工学部長、日本学術会議会員など（歴任）。

Mr. Toshio Ojima, Ph.D., was born in 1937 in Toyama Prefecture, Japan and is Professor Emeritus at Waseda University. He has served as president of the Japan District Heating & Cooling Association, the Building Maintenance & Management Center, and the Asia Institute of Urban Environment. He has also served as chairman of the Japanese Society of Landscape Designs (his present post), and has been a visiting professor at the University of Tokyo, chairman of the Architectural Institute of Japan, dean of the Waseda University's School of Science and Engineering, and a member of the Science Council of Japan.

2011年3月11日の東日本大震災および、東京電力の福島第一原子力発電所の事故以降、日本という国のあり方やエネルギー問題を根底から見直そうという機運が高まっている。明治維新から続いてきた東京への中央集権、一極集中の課題を指摘し、美しい日本のあるべき姿を追求されてきた尾島俊雄氏に、これからの日本の都市のありかたをたずねた。

—東京への一極集中を懸念され続けておられました。
 私が提案しているのは首都の移転ではなく、首都機能の分散です。首都が持つ、政治、経済、祭祀の機能を分散すべきなのです。日本は災害列島であることを自覚し、万一首都が機能を喪失しても、他の都市が機能をバックアップできるように国を設計し直すべきなのです。
 明治維新以前の日本では、東と西が拮抗することで日本特有の文化を形成してきました。日本は糸魚川—静岡構造線で東西に分かれ、気候風土だけでなく、文化的にも大きな違いがあります。この違いが共存していることが日本の活力を維持してきました。古くは、

水田農耕文化と狩猟・漁労・採取文化、平氏と源氏、京都の朝廷と幕府などの緊張関係が日本の文化を培ってきたのです。西は変わらないことで継承される文化、東は変わることによって継承される文化ともいえます。祭祀を基として変わらないことで畏敬を集める「権威」と、幕府のような武力を背景にその時々で変わる「権力」の構造が日本にはあるのです。そう考えると、「権威」の象徴である天皇が東京の旧江戸城という「権力」の場におられるのは相応しくありません。京都を祭祀の首都として、大阪を経済の首都とすることを考えてはどうでしょうか。近畿圏と中京圏を合体させることで、東京圏とすべての面で相互支援が可能になります。そうすれば、万一の災害時にも2極のどちらかが機能をバックアップし、避難する人を一時的に預かって災害後の復興を進めることが可能になります。

日本各地にある「まほろば」

—首都機能が分散された時の地方都市はどのようにあるべきなのでしょう。
 古事記に「やまとは国のまほろば たたな

づく青垣 山こもれる やまとうるはし」という倭^{やまと}建命^{たけらのみこと}の歌があります。これは、静かな賑わいがあり山々に包まれ安心できる空間、安心できる国、しかも美しい国、それこそが大和の国…という意味です。都市もまた、安心できて賑わって美しくなくてはいけません。そういう都市づくりをすることが建築にたずさわる者の役割だと思い、日本や世界各国の都市を歩きました。毎年20都市ずつ5年間歩き、100都市を目標に歩きました。そこで分かったのは、日本の地方都市の美しさです。それぞれの都市に、美しい自然と二千年を超える歴史文化とコミュニティが存在しました。

地方都市は。この資産を有効活用しなければいけません。日本は国際交流がまだまだ足りません。観光客や留学生はもとより、研究者や技術者の国際交流も極めて少ない状況です。地方都市は、もっと美しい都市景観を創りだし、国際交流による活性化を図るべきです。

江戸時代の日本は、行政の首都である江戸と、祭祀や商業の首都である上方の二大都市と、200余りある藩が相互に自立していました。各藩は軍事も含めた自給自足を建前

Since the Great East Japan Earthquake on March 11, 2011 and the accidents at Tokyo Electric Power Co. Fukushima Daiichi Nuclear Power Unit that followed, there has been a growing mood in Japan toward rethinking the ideal shape of the country and raising fundamental question about energy problems. This issue of *Architectural Design Report* features an interview with Mr. Toshio Ojima, Professor Emeritus at Waseda University, who shared his views on the ideal cities of the future in Japan, and what a “beautiful Japan” would look like. Mr. Ojima points out issues arising from the centralization of power and overconcentration of people and industries in the Tokyo Metropolitan area, a phenomenon which has continued since the Meiji Restoration.

You have expressed concerns about the excess concentration of population and businesses in the Tokyo area. Could you explain your concerns?

Japan is a disaster-prone archipelagic state, and I believe we must redesign our country so that even if the capital city cannot perform its functions, other cities can serve as a backup by taking over these functions. So what I'm suggesting is not the relocation of the capital itself but a dispersion of the capital functions. The political, economic and ritual functions that the capital assumes should be distributed to other locations as well.

Prior to the Meiji Restoration, Japan's distinctive culture was developed through a rivalry between the eastern and western parts of the country. Despite this rivalry, the two areas maintained a functional balance. Japan is separated into east and west by the Itoigawa-Shizuoka geotectonic line. Each area has its own climate and very distinctive cultures. Coexistence despite these differences has continued to be a source of Japan's vitality. In ancient times, the tense relation

ships between the farming-based culture and the foraging-based culture, between the Heike clan and the Genji clan, and between the Kyoto-based Imperial Court and the Edo-based Tokugawa Shogunate led to the cultivation of a unique culture in Japan. The result is that the culture of the west is a “preserved” culture that is unchanging, while that of the east is a culture that is “passed on” to succeeding generations by changing. In Japan, two kinds of ruling power have coexisted: power that commanded respect by remaining unchanged based on rites, and power that changed from time to time through force of arms, such as that of the Shogunate. If we think this way, we could say that it is inappropriate that the Emperor, as the symbol of the imperial authority, stays at the former Edo Castle in Tokyo, which is the place representing the power of the Shogunate. How about making Kyoto the capital for rites and Osaka the capital for economic activities? If the Kinki and Chukyo regions are combined, the resulting area and the Tokyo area can support one another in all aspects. Once this is accomplished, either of the two poles can provide a backup for the functions of the other. In the event of a disaster, an unaffected region can provide a temporal shelter for disaster victims and promote restoration of the affected areas.

Mahoroba is everywhere in Japan

If the functions of the capital are dispersed, what kind of roles should provincial cities assume?

The Kojiki (The Ancient Chronicles) includes a poem by Yamato Takeru-no-Mikoto who longed for his hometown of Yamato. The poem reads that Yamato is a *mahoroba*, meaning a comfortable place that is thriving with human activity, yet has a calm environment and is a beautiful place surrounded by a range of mountains. A city must also be a comfortable place where people can live and maintain peace of

mind. It should be thriving with activity, and also be a beautiful place. I've always thought that creating these types of cities is the role of those who are engaged in architecture. With this thought in mind, I traveled to many cities in Japan and the rest of the world. My goal was to visit 20 cities each year for five years, visiting 100 cities in total. What became clear to me through these travels was the beauty of provincial cities in Japan. Each city has its own natural beauty and a history of more than 2,000 years, along with a rich culture and a community.

Provincial cities must make effective use of these assets, but Japan still lacks international exchange. International exchange is very limited, not just for tourists and students, but also for researchers and engineers. Provincial cities should concentrate more on creating beautiful landscapes as well as revitalizing them through international exchange.

Japan in the Edo Period (1603-1868) had two major cities—Edo as the political center, and Kamigata (Kyoto and Osaka) as the center of rites and commerce—along with nearly 200 self-supporting *han*, or feudal domains. While these feudal domains were supposedly self-sufficient including military power, they made good use of the cities of Edo and Kyoto/Osaka. They built a network through the *sankin kotai* system of alternate attendance of feudal lords in Edo and their respective territories, or *ko* (associations based on the same faiths).

Even today, self-reliance and internationalization are essential requirements for provincial cities. After World War II, Japan formulated the Comprehensive National Development Plan as a measure to deal with the overconcentration of population and social capital in big cities, and to ensure the balanced development of national territory. This plan led to the construction of 98 airports and 997 ports throughout Japan. Today, Japan's provincial cities are in a phase of maturity that enables them to make good use of social capital.

*本誌では略称を用いています。また、敬称は略させていただきます。

表紙写真:ブラウドシティ神戸名谷(模型)

としつつ、江戸と京・大坂を活用し、参勤交代や講によるネットワークも構築していました。現代でも地方都市の自立と国際化が求められています。戦後、大都市への人口集中や社会資本集中への対応策として進められたのが、国土の均衡ある発展を図った「全国総合開発計画」です。これによって、日本中に98の空港、997の港湾が整備されました。現在の地方都市は、これらの社会資本を活用する成熟社会の段階にあります。

大都市と地方都市が共存するための「二拠点居住」

—地方にある空港や公的建築は多すぎるように思えるのですが。

2050年までに、地方都市では2,000万人以上の人口減が予測され、高齢化も進んでいます。このままでは、せっかく整備した社会資本が無駄になってしまいます。東京から地方都市に機能を分散すると同時に人口も分散することによって、地域の活性化を図る必要があります。その方法の一つが「二拠点居住」です。

江戸時代に参勤交代のために大名が江戸

と国元に屋敷を持っていたように、現代人も二拠点で居住すべきだと考えています。大都市に働き場所や住まいを持つと同時に、地方にも住居や墓を持つのです。住民票は大都市でも、戸籍は地方。財産は地方に蓄え、税金も地方に納める。これにより、災害時のリスクを分散するだけでなく、長期の休暇には地方でリフレッシュすることができます。大都市で働く人は「生け簀」で泳ぐ魚と同じです。そこで働きはすれど、地方で自分を取り戻すことも必要なのです。地方で国際交流や生涯学習、国際観光などに力を貸すことが、地方に賑わいをつくりだします。今、日本に求められているのは、どのような国を創っていくのかという日本人の覚悟です。それを世界中が注目しているのです。新しい生活様式、ライフスタイルが求められているのです。

新エネルギー「バイオマス」で発電と熱供給を

—これからの低炭素社会都市のありかたとエネルギーについてお話しください。

低炭素社会の都市モデルは、政府も指針を

示しているコンパクトシティです。ガソリンを消費し、CO₂を排出する自動車減らし、公共交通でスプロール化した都市をコンパクトに再構築することで、歩いて暮らせる街を創り出します。住宅は、集合住宅にすることで冷暖房に使うエネルギーが約1/5になるという試算もあります。

大きな方向性としては都市がシュリンクしてコンパクト化していくのですが、その途中で限界集落が発生します。また、里山を守るためには飛び地のようなエリアも必要になるかもしれません。そこには太陽光や太陽熱など自立分散型のエネルギー供給と最先端の浄化槽を設けて、途中の給電インフラを省くなどの工夫も必要でしょう。

地方都市のエネルギー供給にはバイオマス発電・熱利用が最適だと考えています。バイオマスとは、植物などから得られた有機物をエネルギー源として利用する方法です。東日本大震災の被災地には、リアス式海岸の周囲に山があり、間伐材などのバイオマスが多くあります。失業対策費を下草刈りや間伐材の収集など、バイオマスを集めることに回せば、豊富なバイオマスを利用することができます。

ests, a large amount of biomass can be put to use. Currently, due to dioxin problems caused when waste is incinerated at low temperatures, biomass power generation cannot be put to full use as it is subject to the Ministry of the Environment's pollution regulations applied for large cities. If biomass is to be incinerated after having been converted into a gas to counter dioxin problems, it costs 100 times more. To encourage provincial cities to adopt biomass, the regulations should be revised. In Austria, biomass accounts for 15 percent of the country's total energy. They are implementing a small biomass-based district heating system for efficient shared use of energy.

Waste heat-based network

Is biomass used for heating too?

Not only biomass but also thermal and nuclear power generation emits heat. This heat should also be used effectively. When it comes to energy, we usually pay attention only to electric power, but 60 percent of the energy use is accounted for by heat. We need to devise a system to make use of heat emitted during electricity generation or after the use of electricity. If we take water as an analogy, tap water after its use is discharged into a sewer. But in the case of energy, although an urban infrastructure has a supply network for electricity and gas, there is no mechanism available to discharge it. This is one of the causes of the "heat island" phenomenon. Heat emitted during heating and cooling is discharged into the air by cooling towers. This degrades the environment and reduces energy efficiency. An enormous amount of energy is needed to discard heat. To make effective use of this "waste" heat, we are suggesting the deployment of a web of underground heat pipes beneath cities. If heat from co-generation systems and incineration of garbage is collected by this pipeline and used for heating, cooling or hot water for people in

現状では低温で燃やす場合にダイオキシンが発生するというので、大都市と同じような環境省の公害規制が適用され、十分に能力が発揮できていません。ダイオキシン対策のために、バイオマスをガス化して燃焼するには100倍くらいコストがかかるのです。地方はバイオマスが利用できるように法規制を改めるべきです。オーストリアでは、全エネルギーの15%をバイオマスで賄い、小さな地域暖房を面的に利用しています。

排熱を利用するネットワーク

—バイオマスは、暖房にも利用されているのですか。

バイオマス発電に限らず、火力発電でも原子力発電でも熱が出ます。この熱を有効活用する必要があります。私たちは電力のみを考えがちですが、エネルギー利用の約60%は熱利用なのです。発電時の熱や、電気を利用した後の熱を利用する仕組みを考えなければいけません。水で説明すると上水道の水を使ったら下水道に流します。しかし、都市には電力・ガスなど、エネルギーの供給ネットワークはありますが、排出する

need, it will result in reduced usage of both hot and cold energy. This is how the district heating and cooling system works. The Japan District Heating & Cooling Association has consistently proposed this plan for the past 50 years, but it still hasn't materialized.

Deployment of area energy networks has progressed rapidly in Europe, with district heating and cooling systems in place throughout Denmark. A similar network of using wasted heat is in place in Manhattan. For Japan as well, a heat supply pipeline will be absolutely necessary to reduce our society's overall energy consumption and build low-carbon cities by reducing CO₂ emissions.

Japan is a mahoroba place for the world

Modern Japan imported many aspects of Western civilization after the Meiji Restoration. Under the slogans of "promoting industrial development" and "national prosperity and military power," Japan invited the Emperor to Tokyo from the western region, and promoted the concentration of people and industries in this area. Japan's defeat in World War II led to the second opening of Japan to the world. By constructing the Pacific megalopolis connecting Tokyo to the center with Osaka, Japan developed into the second largest economic power in the world after the U.S. In recent years, however, other Asian countries have been the drivers of rapid modernization, and have increased their presence. Still, Japan has remained and will continue to be a mahoroba for the world. It has an eco-friendly lifestyle necessary for achieving near-zero greenhouse gas emissions and advanced environmental technologies. I think what is needed for Japan is to send a strong message to the world that "Japan's civilization makes it a world leader."

Thank you very much.

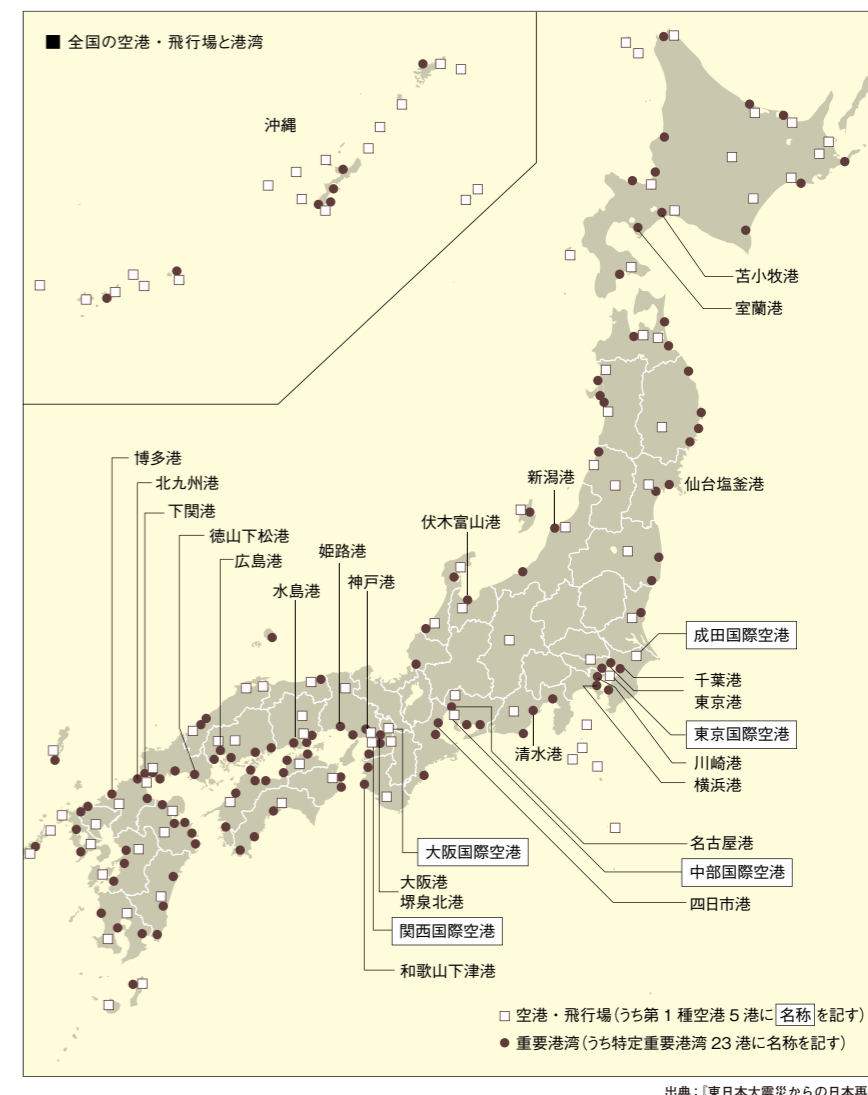
方法がありません。これがヒートアイランド現象の要因の一つにもなっています。冷房や暖房の際に発生する熱を、冷却塔で大気に捨てているのです。これが環境を悪くし、エネルギー効率を悪くしています。熱を捨てるためには莫大なエネルギーが必要なのです。この熱を利用するために、都市の地下に熱供給配管を張り巡らすことを提案しています。CGS (コージェネレーション・システム) やゴミ焼却で出る熱を、このパイプラインに集め、必要とする人がこの熱を暖冷房や給湯などに利用すれば、温熱と冷熱、両方のエネルギーを削減できます。これが都市熱供給処理システムです。都市環境エネルギー協会ではこのプランを50年間提案し続けていますが、いまだに実現できていません。ヨーロッパではエネルギーの面的利用が進み、デンマークでは国中に都市熱供給処理システムを整備しています。マンハッタンにも同様の排熱利用ネットワークがあります。日本も社会全体のエネルギー消費量を減らし、

CO₂排出量を減らして低炭素の都市を実現するためには、熱供給パイプラインの整備が必要でしょう。

やまどくに日本は世界の「まほろば」

近代日本は、明治維新に西洋文明を取り入れ、殖産興業と富国強兵の下に、西から天皇を迎えて東京一極集中を進めました。敗戦による第二の開国では、再び東京を中心に、東京・大阪を結ぶ太平洋メガロポリスを形成して、米国に次ぐ第二の経済大国になりました。ところが近年、アジア諸国が急速な近代化を推し進め、存在感を強めています。しかし、日本は「まほろば」であり、温室効果ガス排出をゼロに近づけるだけのライフスタイルや高い環境技術を持っています。日本は、「世界をリードする日本文明」をグローバルに発信していくべきだと思います。

—ありがとうございました。



出典：『東日本大震災からの日本再生』

"Living in two places" helps facilitate coexistence of big cities and provincial cities

It appears that there are too many airports and public facilities in local areas.

By the year 2050, a population decrease of more than 20 million is projected for provincial cities, and the current population is becoming more and more elderly. If nothing is done to cope with these problems, social capital accumulated to date would all become a waste. While distributing functions of the capital from Tokyo to other cities in local regions, the population should also be distributed to revitalize the local regions. One of the ways to meet this goal is what we call the "living in two places" lifestyle.

Feudal lords in the Edo period had residences in two locations, one in Edo and the other in their hometowns due to the system of alternate attendance. In the same way, modern people should also have residences in two locations, such as having a residence and workplace in a big city, with another residence and family gravesite in a local area. Although you may register your residence in a big city, your census registration can remain in a local region. You can accumulate wealth in a local region, and pay taxes there too. This style enables dispersion of risk in the event of a disaster, while helping you refresh in a natural environment during a long-term vacation. Those who work in a big city are like fish swimming in circles in a crowded aquarium. Even though a big city is an important place of work, a local region provides the freedom to move about, refresh oneself and regain energy. Moreover, by lending helping hands in areas such as international exchange, lifelong learning and international tourism, you can also help local cities thrive again. What Japan needs now is a clear vision of what the Japanese people want their country to be, and their resolve to make it a reality. The world is watching how Japan will meet this challenge. The de-

velopment of new ways of living or new lifestyles is now in demand.

Biomass—a new energy source to supply electricity and heat

Could you speak about the low-carbon society of the future and the issues of energy?

A model city for a low-carbon society is the "Compact City," the concept for which the Japanese government also set forth guidelines. The idea is to create a compact walkable community by reducing cars that consume gasoline and emit CO₂. Today's cities, which face the problem of urban sprawl, should be rebuilt into a more compact form that relies on public transportation. One estimate says that multifamily housing complexes can reduce the city's energy consumption for heating/cooling to approximately one-fifth of its current level.

The main direction of development is to shrink the size of cities and make them more compact. But in the course of this development, marginal villages will emerge. Areas such as enclaves may become necessary to preserve undeveloped woodlands near cities. In a compact city, distributed energy resources may be necessary such as solar energy (light and heat) sources, along with such ideas as an advanced sewage treatment tank to eliminate the need for certain power supply infrastructure. I believe that the use of biomass for electricity generation and heating systems is the most suitable energy source for provincial cities. Biomass is a renewable energy source composed of organic materials from plants and other living organisms. In areas affected by the Great East Japan Earthquake, the mountains surrounding the deeply indented ria coastline provide sources of biomass such as timber from forest thinning. If costs spent for unemployment relief were allocated to collecting biomass through trimming undergrowth or thinning for