

逆都市化する日本で 問われる街づくり。

Urban development to meet Japan's
“reverse urbanization” trend



Takashi Onishi 大西 隆

東京大学大学院工学系研究科 都市工学専攻教授
日本学術会議会長

Professor, Department of Urban Engineering,
Graduate School of Engineering, The University of Tokyo; and
President, Science Council of Japan

1948年、愛媛県生まれ。東京大学大学院工学系研究科 都市工学専攻教授、東京大学先端科学技術研究センター教授、日本学術会議会長、総合科学技術会議議員、日本計画行政学会会長（現職）、日本都市計画学会会長、日本テレワーク学会代表幹事、国際都市住宅連合評議員、東日本大震災復興構想会議委員など（歴任）。

Dr. Takashi Onishi was born in 1948 in Ehime Prefecture, Japan. Presently, he is Professor of the Department of Urban Engineering at the Graduate School of Engineering of the University of Tokyo, and is also Professor at the University's Research Center for Advanced Science and Technology. He also serves as president of the Science Council of Japan, a member of the Council for Science and Technology Policy, and president of the Japan Association for Planning Administration. His past career includes serving as president of the City Planning Institute of Japan, president of the Japan Telework Society, council member of the International Federation for Housing and Planning, and member of the Reconstruction Design Council in Response to the Great East Japan Earthquake.

「逆都市化」という言葉は人口の減少と、それに伴う都市の縮小を意味する。日本は2007年頃をピークに人口減少に転じ、この先、先進国がいまだかつて経験したことのないドラスティックな勢いで減少を続けると予測されている。経済が右肩上がりの成長を続け、社会資本へ大規模な投資が繰り返された都市化の時代は過ぎ去った。その日本において都市はどう変化するのか、街づくりはどうあるべきか。「逆都市化」の概念を提唱した東京大学大学院工学系研究科都市工学専攻教授、大西隆氏にたずねた。

—今後、日本がたどる人口減少はどのようなものですか。

私は1948年生まれで団塊世代の一員です。同い年は約270万人でしたが、それに比べて、現在、生まれてくる人は年間105万人～110万人。単純な置き換えで考えると、毎年160万人以上、急速に人口が減少し続ける時代がまもなく到来することになります。そして、2100年には総人口が現在の4割程度になるとする予測もあります。大阪の人口はすでに減少しはじめていますし、東京でも

The term “reverse urbanization” refers to the movement of population away from urban areas accompanied by shrinking cities. Japan’s population reached its peak around 2007, then began to decline. This led to projections that the country will face a population decrease at a more rapid pace than any advanced country has ever experienced. The age of urbanization, with steady growth and repeated large-scale investments in social capital, has already passed. Faced with this reality, in what way will Japanese cities change? What would be the ideal urban development strategy for Japan? As an advocate of “reverse urbanization,” Professor Takashi Onishi of the Department of Urban Engineering at the University of Tokyo’s Graduate School of Engineering shares his answers to these questions.

First of all, can you explain the population decrease that Japan will experience in the future?

I was born in 1948, so I’m a sort of baby-boomer. Compared to the 2.7 million people that were born in the year of my own birth, newborns today number just 1.05 to 1.1 million a year. One simple way of thinking of this is that there is a loss of 1.6 million people in a typical year. The age of such a rapid population decrease will arrive shortly. There’s even a forecast that by 2100, the total population will be only 40 percent of what it is today. The population in Osaka has already begun to decrease, and Tokyo will soon experience a decline. With the upcoming trend of “reverse urbanization,” population decreases will be experienced not only in rural areas but in big cities as well.

Almost no advanced economies have experi-

やがて減り始めます。「逆都市化」の時代には地方都市のみならず大都市でも人口が減少するのです。

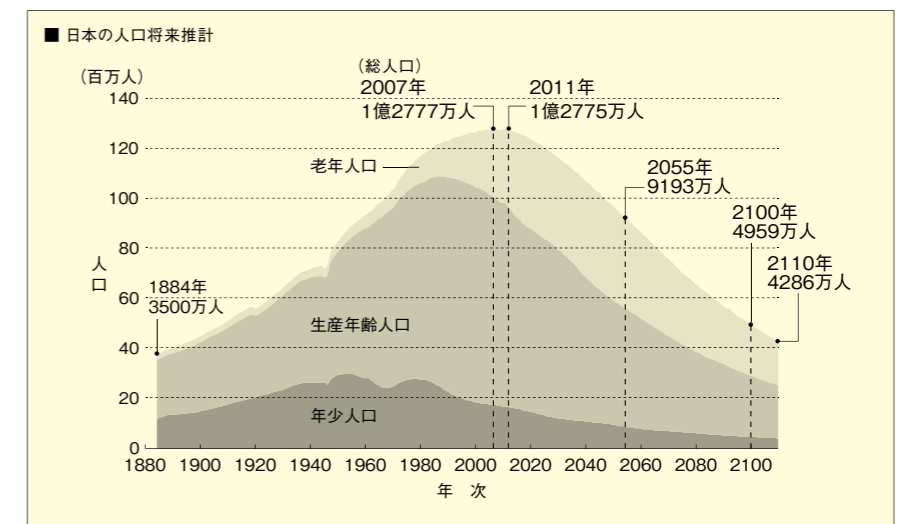
これは、ほとんどの先進国で未経験のこと。アメリカでは人口が増加、ヨーロッパでも明らかに減少しているという国はなく、戦争で人命が失われた国を除けば、発展途上国でもあまり例がありません。しかし、日本はすでに人口減少期に入りました。減少傾向をどう止めるかは我々の世代の課題ですが、30～50年先まで減り続けるのは避けられないことなのです。今後の都市のあり方は、これにどう対処するかが大きなテーマです。

**拡大した都市におこる
構造の変化と居住者の動き**

—都市が縮小に向かう時、中心市街地は核として残るのでしょうか。
都市に人が集まってきた都市化の時代、都市は外延的拡大を続けました。ところが、都市が縮小する場合は外から縮んで中心市

街地が残るというわけではなく、色々な所から縮みます。現に、日本各地で中心部の空洞化が進みました。多くの地方都市で中心市街地の商店街がシャッター街となり、地価が高い大都市中心部では住宅の代わりにオフィスが建ち並んで居住者が少なくなりました。アメリカでは発達した道路網を背景に、大都市の周縁部に住宅や学校、職場、ショッピングセンターなど、一通りの都市機能を備えた新しい生活圏、いわゆるエッジシティが出現しています。そこまでの変化は日本では見られないものの、やはり郊外化は進んでおり、そこへ人口減少の要素が加わって中心市街地の低密度化を招いたのです。

一方、20年ほど前から都心居住ということがいわれてきました。東京都中央区がその一例です。銀座や東京駅のあたりでは、第二次世界大戦後のピークに27万人ほどあった人口が7万人にまで減り、オフィスの集まる中心市街地は夜にはゴースタウンのようでした。危機感を強めた自治体がオフィスに住宅付義務を課すなどした結果、1995年を



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enced such a phenomenon. In fact, population is increasing in the United States, and there are no European countries that are experiencing obvious declines. Even among developing countries, the phenomenon of shrinking population is rarely seen, except for the loss of human lives during war. But Japan has already entered such a period of shrinking population. Although it is our generation’s responsibility to find ways to counter this downward trend, continued decreases during the upcoming 30-50 years will be inevitable. The biggest challenge is deciding how cities of the future should cope with this trend.

Structural changes and movement of residents in expanded cities

As cities continue to shrink, will urban centers remain as the core?

When more and more people were moving

into the cities, these cities continued to expand outward from the center. But in the case of shrinking cities, the process is not simply reversed in a linear fashion. In other words, the phenomenon of shrinking will not move from the outside toward the center, leaving urban centers intact. Instead, shrinking occurs in various locations of a city. In fact, many Japanese cities have experienced the “hollowing out” of city centers. While downtown shopping avenues have become depressed in suburban cities, more and more office buildings have replaced residences in the central part of larger cities with high land values, resulting in fewer residents. In the United States, against the backdrop of fully developed road networks, so-called “edge cities” have emerged at the periphery of metropolitan areas. These cities create new living communities with a sufficient range of urban functions, such as houses, schools, workplaces and shopping malls. Although changes to this

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境に人が戻りはじめました。都心には鉄道駅や病院、百貨店などが集積して便利であることが再評価されているのです。ただし、若い人たちが戻ってきても、家族になり子供が生まれて人口回復につながるということにはなっていません。都心の出生率は低いのです。1人の女性が生涯に何人子供を産むかを表す合計特殊出生率は2.07にならないと人口が安定しませんが、中央区の場合は1.1程度。少し回復してこの程度です。

都市化の時代に造られたインフラを 少人数で支える

一減少を前提とする施策が必要ですね。人口減少期に懸念されることの一つは、インフラの維持管理費の負担増です。たとえば、高速道路は通行車両、すなわち利用者が維持管理費を負担していると考え、人口減少によって1人分の負担は増加します。都市化の時代であった1960～70年代に道路や橋梁が次々と建設されました。それらの維持管理費は膨大な額になっており、少人数で負担するのは厳しいのです。大量輸

送を念頭に置いていた道路網は、需要予測が人口減少期の実態と乖離していますから、維持管理費不足で放置される道路が出る可能性さえあります。今後は人口減少期にふさわしい維持管理のプランを考えないといけません。全ての道路を維持管理する必要が本当にあるのか、路線数の縮小なども含めて検討が必要です。維持管理費は基本的に受益者負担ですから、利用者が少ない道路でも、「自分が費用を負担しなくてよいなら」直して欲しいといったモラルハザードも回避しなければなりません。下降する経済力を視野に入れ、徹底して無駄を省く姿勢が求められます。

都市のサイズに合った計画を 選択する時代へ

一人口減少によるプラスの側面もあるのでしょうか。自治体の都市計画の中には、まだ、明日からは人口が増えるといった幻想を抱いているものがみられます。今後、過疎地の人口が急増するということはありません。過疎地ではあるけれど、豊かに残る自然の魅力を

生かして観光を振興するなど、過疎地だからこそできる役割を見つけていくことです。人口が減ったといっても、そのスケールにふさわしい暮らしはできるはず。北欧で一番人口の多いスウェーデンでも、950万人程度。1人当たりの経済力を維持できれば、暮らしが安定することを体現しています。人口減少はゆとりや環境共生の観点ではプラスに作用しますから、急激に減る時期をしのごき、その後、どのようにその社会をエンjoyするか考えていかなければなりません。

市民の目線を反映する街づくりに 活用が期待される「環境計画支援VR」

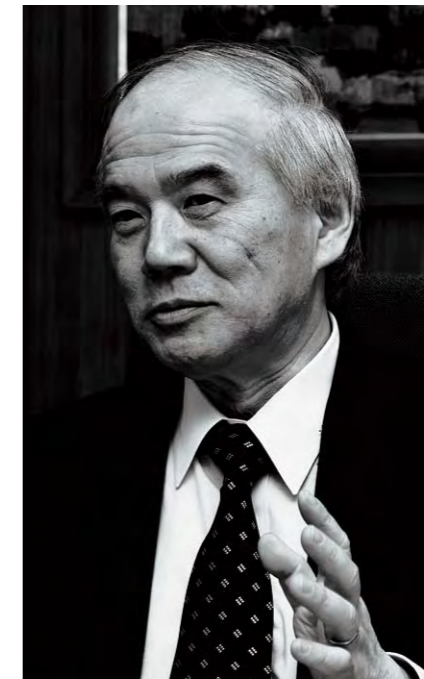
一街づくりに興味を持つ人が増えてきました。これまで日本人は経済性優先の名の下に都市全体の景観をほとんど考慮しないできました。先に述べた都心居住の場合でも、一戸建て住宅に隣接して高層マンションを建てるといったことを平気で行ってきたのです。そのため、現在の都心居住の姿は便利ではあるが、都市景観的には美しくないという欠点を持っています。人口が減ると土地にゆとりができる、混雑が緩和するなど、良い

面もあるので、それらを享受すべきです。今後の街づくりに際しては、低層住宅の隣に高層ビルが建つとどのような圧迫感があるのか、どれぐらいの高さの建物を配置すべきかなど、景観計画を支援するVR（バーチャリアリティ）で確認しつつ、地権者の権利も守りながら合意を形成することがますます重要になるでしょう。景観法の施行以降、都市景観への関心が高まっています。一般の人にとって図面では分かりにくい場合でも、VRなら複数のプランを比較しやすく、生活実感も得られます。街づくりの協議に有効に活用できると思います。

都市スケールで 日本の技術力をアピールする

一新しい街に期待するものは何でしょうか。人口減少が続く日本では、かつてのようなニュータウンを次々と新たに建設する必要はありません。取り組みが進む北九州市城野地区はゼロ・カーボン先進街区としてデザインされています。太陽光・太陽熱のフル活用、電気自動車、コージェネレーションなどの最新技術を導入し、計算上、CO₂を一切出さ

ないことを提案する新しい街づくりです。スマートシティはICTや環境技術によって便利さと安全性が確立された街ですから、人口が多くなっても快適に生活できるのです。スマートシティのメリットを日本人自身が享受するのはもちろんのことですが、上下水道やエネルギーの供給システム、セキュリティ、交通システムなど、日本が誇るインフラ整備のノウハウを都市スケールで対外的にアピールすることも大事です。今後、アジア各国をはじめとする発展途上国は都市化が加速します。第二次世界大戦後、日本は都市化が引き起こした公害や交通渋滞といった諸問題を解決してきたのですから、それらの国々が日本と同じプロセスを歩まなくても、もう少し早く快適な都市を構築できるように貢献できるでしょう。そして、それは日本の産業にも大いに価値があります。スマートシティが日本の技術のショーウィンドウとなる。



そうした役割も期待したいものです。

東日本大震災後の街づくりは、 どこに集落を造るから始まる

一東日本大震災復興構想会議委員のご経験から、復興への思いをお聞かせください。阪神・淡路大震災は地震と火事による被害であり、防火対策を講じれば同じ場所での再建も可能でした。しかし、東日本大震災は津波による被害。より安全な土地へへの思いが強くあり、集落の高台移転などの計画は200カ所以上に及びます。場合によっては数戸単位のケースもありますが、小さな集落でも全てのインフラ整備が必要で費用は膨大になります。いくつかの集落が並び、中央に病院や学校を配置できれば持続的な街がつくれるのですが、さまざまな事情の違いから、そうした議論にまでいかないのが現状です。高齢化問題もあり、計画時と入居時で条件が変わっている事も予想されます。復興は急がれますが、丁寧にやっていくことが大切です。

一ありがとうございました。

Post-earthquake reconstruction starts with determining locations to build communities

You served as a member of the Reconstruction Design Council in Response to the Great East Japan Earthquake. Based on this experience, please tell us your thoughts about reconstruction of eastern Japan.

In the previous case of the Great Hanshin-Awaji Earthquake, the damage was mainly caused by quakes and fires, so reconstruction of communities was possible in the same locations as long as new fire prevention measures were taken. But with the Great East Japan Earthquake, tsunamis caused the most severe damage. Residents of affected areas naturally show a strong desire to move to safer places, thus relocation of communities is planned at more than 200 locations including upland areas. Even in the case of small communities made up of only a few houses, the development of a complete infrastructure is often necessary, which requires significant cost outlays. Once several communities are lined up around a town center equipped with hospitals, schools and other common-use facilities, it is in fact possible to create a sustainable city. But in the current circumstances, the differing conditions that each community or individual faces make it difficult to even enable such a discussion. Also, because of the problem of aging population, it may be possible that conditions would change between the original planning stage and when people actually enter new residences. Although speedy reconstruction is essential, it is equally important to take maximum care.

Thank you very much.

extent have not yet occurred in Japan, suburbanization has obviously progressed. This, combined with population shrinkage, gave rise to low-density urban centers.

By contrast, the trend of urban dwelling can be seen starting about 20 years ago. A typical example is Tokyo's Chuo ward. In Ginza and areas near Tokyo Station, the post-WWII peak population of 270,000 people had declined to 70,000, creating "ghost towns" at night in urban centers with lots of offices. Concerned with this situation, the Tokyo metropolitan government established an ordinance that required construction of residential housing when new office buildings of a certain scale are built. As a result of these measures, people began to return to downtown Tokyo, with the year 1995 as a turning point.

Urban centers have regained their reputation of convenience, with the integration of train stations, hospitals, department stores and other facilities. This encouraged young people to return to the urban centers, but it has not led to recovery in population through young people having families and babies. The birth rate of urban centers is still fairly low. Unless the total fertility rate (indicating how many children a woman gives birth to in her lifetime) reaches 2.07, the population will not stabilize. In the case of the Chuo ward, the total fertility rate remains at 1.1, even after a slight recovery.

Infrastructure established during the period of urbanization has to be supported by a very few

Are you saying that appropriate measures must be devised with the assumption that population will decrease?

An issue of concern related to the period of

decreasing population is an increase in infrastructure maintenance costs that must be borne by each individual. For example, the maintenance cost for expressways is borne by passing vehicles or users, so decreased population will increase the per-person cost. During the urbanization of the 1960s to 1970s, roads and bridges were constructed one after another. Maintenance costs for such infrastructure facilities have swollen by an enormous amount, and it is difficult for fewer people to bear these costs. The road network originally built with large-volume transportation in mind is no longer suitable for a period of declining population. This may even cause some roads to be left unmaintained due to lack of money.

For the future, we need to devise infrastructure maintenance and management plans suitable for the period of decreasing population. We may have to ask ourselves whether it is really necessary to spend all this money to maintain every single road, and this sort of review may lead to a decision to decrease the number of routes. We will also have to strictly avoid the moral hazard of people wanting to fix a road with limited users if they themselves don't need to bear the cost. This moral hazard can be avoided by conforming to the principle that it is beneficiaries that are liable for maintenance costs. An attitude of strictly cutting waste is absolutely necessary in the time of downward economic trends.

Possibility of choosing a plan suitable for each city's size

Are there any benefits from declining population?

Even today, some municipalities' urban plans are based on the illusion that population will

begin to increase shortly. But there is simply no way that underpopulated areas will enjoy rapid increases in population. Underpopulated areas should seek ways to put their attractive features, such as abundant natural surroundings, to full use. This can be done by promoting tourist spots, and finding roles they can best play by leveraging their characteristic of being less populated. Even faced with dwindling populations, residents of these areas should be able to enjoy lifestyles that match each area's scale. For example, Sweden is the most heavily populated country in North Europe, but its population is only 9.5 million. This indicates that as long as per capita economic power can be kept high enough, people can enjoy secure living. Also, population decrease can provide positive effects in terms of comfort and harmonious co-existence with the environment. So it is important to think of ways that we can enjoy social life in less populated areas, once we find ways to cope with the sudden decrease in populations.

VR supports landscape planning for creation of cities reflecting citizens' perspective

It seems that more and more people are beginning to show interest in urban development. Is that true?

Yes, it is. In the past, Japanese people didn't concern themselves much about urban landscapes. Their priority was economic above anything else. As for urban dwelling as well, high-rise condominiums were built next to single-family houses without scruple. Because of this lack of consideration, Japanese cities today are convenient to live in but lack landscape beauty. Declining populations provide more room on existing land and ease congestion,

so these advantages should be fully enjoyed. Consensus-building while protecting the rights of landowners will become increasingly important for urban development of the future. Here, the Virtual Reality (VR) system to support landscape planning will play its part in checking the degree of oppressive feeling that residents of low-rise apartments would feel when high-rise buildings are built next to them, or determining the suitable height of buildings to be laid out in a certain area. Since the Landscape Law was put into effect, public interest in landscaping has been rising. Citizens may find it difficult to understand design drawings, but the VR system makes it easy for people to compare multiple plans and imagine how a plan would look in real life. I think it is a very useful tool for discussions in an urban development project.

Promoting Japan's technological strength in the form of a city-scale infrastructure package

What do you expect from new cities?

If Japan experiences continuous declines in population, it is no longer necessary to construct "new towns" one after another as in the past. Kitakyushu City's Jono area is now being developed to become an advanced zero-carbon model block. By making full use of solar light and heat, and adopting advanced technologies such as electric vehicles and co-generation systems, this block will be computationally designed to be free from carbon dioxide emissions.

Smart cities boast established convenience and safety by means of information and communications technology and environmental technology, thus people can lead comfortable lives even with less population. Japanese people should fully enjoy the significant benefits that