

Special Contribution:

UEYAMA Takahiro, Member of the Council for Science, Technology and Innovation



People reading this white paper may have heard of the term "Society 5.0." However, as school textbooks do not offer detailed explanations of this term, so many people may be wondering why "society" should become a topic of discussion related to science and technology.

Society 5.0 is a concept that appeared for the first time under the 5th Science and Technology Basic Plan. It is the vision of a future society to follow the previous societies that appeared over the course of human history—hunter-gatherer society (1.0), agricultural society (2.0), industrial society (3.0) and information society (4.0). Under the plan, Society 5.0 was described as a “super smart society” in which data on all people and all goods are connected in the virtual space of the internet through state-of-the-art science and technology, including IoT,¹ robotics, and artificial intelligence (AI) and in which everyone has just enough access to necessary goods and services at any time they like.

Some people may associate the society with the dystopia (the opposite of a utopia) of a super-controlled society described by George Orwell in *Nineteen Eighty-Four*. Therefore, the description of the world to be realized under the Society 5.0 concept was re-interpreted in the 6th Science, Technology, and Innovation Basic Plan to read "a society in which digital transformation² changes people's lives in a better direction in all aspects" and "a society that is sustainable and resilient against threats, that ensures the safety and security of the people, and that enables each and every one of them to realize well-being."

However, even if Society 5.0 is described in every possible detail, it is difficult to have a realistic image because nobody has yet seen such a society. Rather, I regard Society 5.0 as the expression of Japan's resolve to open the door to a new age by means of science and technology.

"Science" in its fundamental nature is a purely intellectual curiosity that seeks to explore unknowns. However, at a major turning point in history, there appeared a stage at which scientists eagerly discussed "society." That was true of the social reform movement of the 19th century. As a result of the Industrial Revolution that started in the second half of the 18th century, mankind for the first time came out of the Malthusian trap, as conceived by Thomas R. Malthus,³ and achieved explosive population growth. On the other hand, many scientists tried to address "social problems" of the 19th century that emerged as a result of this situation, such as an extreme wealth gap and a poor urban environment.

Currently, human activities that accelerated in the 20th century, as exemplified by increases in carbon dioxide and methane gas in the atmosphere and discharges of plastics into the seas, are causing abnormal weather events, climate change, and a huge ocean ecosystem crisis. Some scholars argue that from the perspective of the history of the Earth, this marks the arrival of a new geological age. Probably, now is the time for scientists to bring together their wisdom to realize a new, better society in order to survive this age of hardship, which is sometimes called the "Anthropocene."⁴ Society 5.0 embodies a daring spirit that seeks to resolve problems regarded as impossible to overcome by means of science and technology and also incorporates traditional Japanese values, such as mutual trust, coexistence, collaboration, and sharing. Those values are probably the key to overcoming the negative global legacies left by the 20th century society. Society 5.0 also represents a wake-up call for the world in this respect.

1. IoT stands for Internet of Things. It enables remote monitoring and operation by connecting not only personal computers, smartphones and the like but all things (e.g., home appliances, automobiles, and houses) through the internet.

2. This is the idea that the penetration of information and communication technology (ICT) will change the people's lives for the better in all aspects. It is a concept proposed in 2004 by Professor Erik Stolterman of Umeå University (Sweden).

3. This theory maintains that the population growth rate always becomes higher than the growth rate of agricultural production (economic growth rate) and that when the former overtakes the latter, a "natural trap-like principle" that curbs population growth, as embodied by poverty, hunger or war, always works. It was proposed by Malthus, a U.K. economist in the 19th century.

4. In 2000, Paul Crutzen, winner of the Nobel Prize in chemistry, proposed the idea that because of the impact produced by mankind on the global environment, the Earth entered a new geological age, which he called "Anthropocene," following the Holocene, which had lasted for 11,700 years until the present.