Introduction to the Special Issue on
“Tokyo: Past, Present, and Future (Part I)”

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Since the end of World War II, the city of Tokyo has developed as a mega-city. It is characterized by an overconcentration of people, goods, capital, and information, and presents the aspect and features of a megalopolis. However, at present, the Tokyo megalopolis is facing various difficulties and conflicts, which have been caused by changes in industrial structure, technical innovation, information revolution, and diversification of individual values. Furthermore, the energy revolution and globalization complicate this situation. At present, Tokyo is standing at a critical juncture of the 21st century, while having a fully developed culture.

When a new civilization develops rapidly in a short period, it destroys and transforms the civilization that preceded it. Now, with a new wave of innovations related to information, we need to discuss the functions of Tokyo as a city of the future and suggest what hardware is needed for such a city.

The challenges of a megalopolis in the 21st century are not only faced by Tokyo. They are also common to other cities such as London, Paris, New York, and Shanghai in developed countries, as well as cities in developing countries of Asia, because the world has become borderless. A huge number of people, as well as vast amounts of capital, information, and goods can be exchanged in a moment around the globe. In this special issue, we discuss the Tokyo metropolis from a global point of view, while being aware of the transitions of the city. To suggest a civilization of the future, we summarize the history of Tokyo and the challenges in designing Tokyo as a super-city of the future from the viewpoint of earth science, physical geography, archaeology, human geography, history, and politics.

The editorial committee of the Tokyo Geographical Society aims mainly to trace changes in the infrastructure of the city from before the Edo period until present-day Tokyo, and a variety of human activities from multiple viewpoints including environmental science and city planning. At the same time, we review infrastructure improvements, and discuss what a city of the future requires.

This special issue is published in three volumes. The first volume is “Tokyo: Past, Present, and Future (Part I),” which concentrates on the past; the second volume is Part II, which focuses on the present; and, the third volume is Part III, which looks to the future. A brief review of each paper in the first volume are as follows.

The first paper by Sugai et al. (2013) summarizes the topographic evolution of the Kanto

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Plain over the past 400,000 years, focusing on the correlation between tectonic activity and glacio-eustatic sea-level changes. They discuss the marine transgression and fluvial processes in the region, and how they control landforms.

The second paper by Tanabe (2013) presents a series of paleogeographic maps of Tokyo and its surrounding region, based on 18 drilled cores, ca. 500 carbon 14 ages, and depth of paleo-water. The paleo-topography seems to have been specifically controlled by the morphology of the basement, tidal currents, and artificial changes of river systems around the year 1600.

Endo et al. (2013) argue that the formation of the Tokyo lowland and soft sediment of the Alluvium relate to the Jomon (6000 years ago) worldwide transgression, which reached ca. 4–5 m above the current sea level.

Land transformation in the Tokyo area is discussed by Kumaki et al. (2013). They briefly review artificial land transformation going back to the 20th century. They divide the period into four stages: 1) before 1965, 2) 1966–1975, 3) 1976–1981, and 4) after 1982. Prior to 1976, the construction of artificial islands in Tokyo Bay was dominant. Since 1982, land reclamation has decreased sharply with the exception of the area needed for the expansion of Haneda international airport. They caution that a large earthquake in the future could trigger liquefaction.

Climate variations in Tokyo since the 18th century are summarized by Zaiki and Mikami (2013). During the Little Ice Age, a cold climate was recorded clearly in Tokyo, which ended around 1840–1950. Global warming in the 20th century is shown specifically through winter temperatures and daily minimum temperatures. The heat-island effect is also probably due to urbanization.

Takaoka (2013) summarized changes in ecosystems caused by urbanization over the past 100 years. Faunal changes are linked to rapid changes in the artificial environment, which warn of the continuous changes underway in the ecosystem of the Tokyo metropolis.

The history of urban water use, both surface water and groundwater in Tokyo, is summarized by Yamashita (2013). The beginning of the construction of the metropolitan waterworks dates back to the Edo period, which then underwent major changes after World War II to upgrade the Metropolitan waterworks and its network. The potential for using groundwater as well as surface water has been explored, and surface water from the suburbs has been effectively delivered to the Metropolitan area.

Okamura (2013) notes that the landscape of Tokyo has evolved in four stages from the Edo period to the present day. After reviewing the urban landscape throughout each stage, he concludes on the necessity of sophisticated theories and comprehensive use of technologies to manage the city.

Matsuda (2013) verifies the vulnerability of Tokyo to natural disasters caused by artificial landfill modifications to enlarge the land area since the 17th century, which were first for agriculture and shipping, followed by industrial use after the opening of Japan in the late 19th century. Particularly after 1970s, land began to subside in Tokyo due to the overdrawing of groundwater. Serious effects of urban development may include more dangerous events in the future, e.g., flooding, storm surges, and earthquakes.

The paper by Suzuki (2013) summarizes the history and future of volcanic disasters in and around the Tokyo metropolitan area. He lists dangers associated with the volcanoes Mt. Fuji, and Mt. Asama. He suggests the potential for secondary disasters caused by lahar along the Tone, Edo, Sakawa, and Sagami Rivers.

References


Okamura, Y. (2013): The past, present, and future


