A quantitative observation of the relation among population distributions, road networks, and dialectal similarities

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We have been developing LAJDB (Linguistic Atlas of Japan Database). The Linguistic Atlas of Japan (LAJ) is the Japan's first nation-wide linguistic atlas based on the geographical linguistic survey conducted from 1957 to 1965 (2400 surveyed localities) (NLRI 1966–1974). By using the LAJDB subset, I have made observations of distributions of the standard forms and the linguistic similarities among localities. In the observations, I used the data of road networks, the one around 1885 and the present one, to explore the dialect distribution and diffusion. In this paper, I introduced the time series population data of the National Census from 1920 to 1980, adjusted on the basis of the boundaries of the 3433 municipalities at the time of the 1980, for the time series comparisons (Toyo Keizai Shinposha 1985).

For a macro view observation, I compared the population distributions and the spatial patterns of the linguistic similarities among the surveyed localities through the network representation using Delaunay triangulation. The comparison revealed clear correspondences between them. For a micro view observation, I compared the population distributions and the frequencies of the standard forms of each locality along several road networks. In my previous analysis, there was a case that a side road was more prominent than a main road with regard to the frequencies. This apparently strange case can be more easily understood with the population data. The dialect distributions are formed through contacts between persons. The analysis of dialect diffusion and distribution patterns, combined with the data of population distributions and the road networks will be discussed.