

7. Deformation of Topography

The present author applies herein an idea on a shape of an alluvial fan of Murata (1931) and Kaizuka (1957). The fans of the Kanna, Arakawa, Iruma and Tama Rivers will be exemplified. The apexes of the fans are considered as the starting points of rivers which flowed into the alluvial plain and deposited there the gravels, and the fans were formed by many distributaries. The base lines of the cross section (Fig. 7-2) are drawn on the contour map (Fig. 7-1). Every fan was originated and developed in the different age which was defined by the covering volcanic ashes.

The places of the cross sections along the line in the direction of the maximum gradient on the map in Fig. 7-1 correspond to those in Fig. 7-2. Fig. 7-1 is the contour map in which every vertical interval is 10 m, and every 20 or 30 m in the hills. This paper discusses only the hills and plateaus covered by the volcanic ash and present river floors.

In summit level, the Sayama Hills (D) is the highest and the Azuyama (C), western part of the Tama (B) and Hanno (A) Hills in order of altitude. The hills on the north of the Sayama Hills are lower in northward (Fig. 7-2). The western part of the Tama Hills on the south of the Sayama Hills is also low in altitude. In the Tama Hills, the apex of the fan as the starting point of the fan can not be decided. Judging from the overlying volcanic ash, the Tama Hills are a little younger than the Sayama, Azuyama and Hanno Hills. If there were the contemporaneous terrace with those of the Sayama, Azuyama and Hanno Hills, the altitude of the Tama Hills should be higher than the present distribution. The gradient of (A)~(D) is steeper than that of the plateaus.

The Shimosueyoshi Terraces including the Tokorozawa, Yodobashi and Omiya Terraces are different in age of the terrace formation. The duration of formation of the Shimosueyoshi Terrace is shorter than that of the "Tama Terrace". The equivalent of the "Shimosueyoshi Terrace" should be considered all together.

The order of altitudes is Kaneko-dai (G), Tokorozawa-dai (H), Konan Plateau (F) and Iruma Plateau (E) in descending order. The Kaneko-dai and Tokorozawa-dai are extremely higher than the other plane of the Shimosueyoshi Terrace. The Yodobashi-dai (I) in the Musashino Plateau and the Omiya Plateau (J) are almost horizontal and show the topography of sea floor on which the marine Tokyo Formation was deposited. The Omiya Plateau between 10 ~ 20 m in altitude is lower than the Yodobashi-dai between 30 ~ 40 m in altitude. Judging from the succession of volcanic ash layers, the Omiya Plateau was below the sea level after the emergence of the Yodobashi-dai and Ebara-dai. Due to sea level lowering, the Omiya Plateau emerged. As a result, the Omiya Plateau decreases the altitude than that of the Yodobashi-dai and Ebara-dai. However, the age of terrace formation (Kawaguchi Clay) in the Omiya Plateau is contemporaneous with that of the Musashino Terrace.

The distribution of the Narimasu Terrace is restricted in the Hino Plateau (K) and Narimasu-dai (L). As distribution in (K) is small, the deformation amount is not clear. (L) is the northeastern part of the Musashino Plateau and is distributed narrower than the southern part on the contour map (Fig. 7-1). The horizontal interval of the contour lines is narrow in the northwestern part. Probably the Narimasu-dai area is lowered to northwestward of the Musashino Plateau but the subsidence is not so large.

The Musashino Terraces of the Kushibiki (O), Iruma (N) and Higashimatsuyama (M) Plateaus are not recognized in the deformation. While the horizontal interval of the contour lines in Kawagoe-dai (P) is narrow and the altitude of (P) is higher than these three Plateaus. Judging from the horizontal interval of the contour lines in the adjacent areas, (P) is most lowered. Gradient of (P) is the largest in the Musashino Terrace and the deformation of (P) is considered to occur

The Tachikawa Terrace along the Tama River (U) on the southside of the Sayama Hills is higher in altitude than that along the Toshitorazu River (T) on the northside of the Sayama Hills. The Tachikawa Terrace along (P) is higher in altitude than those of the Honjo (S), Iruma (R) Plateaus and Yorii-Fukaya (Q). The altitudinal distribution of the profile of (S), (R) and (Q) is almost same.

The profile of the Tama River (Z) and the Kanna River (Y) are the highest in altitude. The height of river floor of the Iruma (X), Arakawa (W) and Koma (V) Rivers are similar.

In the northern part of the Omiya Plateau, Gyoda , Hanyu, Kazo, Kuki and Koga Cities, and Kurihashi Town (Fig. 1-2), the Pleistocene Terraces are overlain by several meters of alluvial deposits. This fact may be a proof of continuation of the basining movement in the Kanto Region.

As mentioned above, the altitude of older terraces is higher than that of the younger one. The deformation of older terrace is greater than that of the younger terraces (Fig. 7-1). On the right bank of the Arakawa River, each terraces are inclining toward the Arakawa Lowland between the south of the Yoshimi Hills and the north of Kawagoe City. It is clear that the subsidence became larger to northwestward of the Musashino Plateau which includes the Kaneko-dai, Tokorozawa-dai and Kawagoe-dai.

On the contour map (Fig. 7-1), the horizontal interval of the contour lines become narrower in the northwestern part and wider in the eastern half of the Musashino Plateau. The horizontal interval of the contour lines in each plateau from the Honjo to Iruma Plateaus exists between the horizontal interval of northwestern part and that of eastern half of the Musashino Plateau.

Estimation of the deformation of the hills is not precise due to narrow distribution of gravels and its overlying volcanic ashes.

Horiguchi (in Kakimi and Suzuki, 1974) stated the subsiding area exists in the

Arakawa Lowland between the Yoshimi Hills and the Kawagoe City. The terraces are higher in altitude to the distant places from the southern part of the Yoshimi Hills northward and northern part of the Kawagoe City southward. This proportion becomes large to southward.

There are many steps in the terraces in the Tama River Basin in the southwestern part of the Musashino Plateau as shown in the divisional maps of the terraces by Juen (1966a) and others. The uplift of the Tama River Basin is clear as shown in the topographic divisional investigation of Juen (1966a) and the present author.

Judging from the drainage pattern (Fig. 7-4), the stream acrossed the northern part of the Musashino and Iruma Plateaus, flows from the southwest to northeast as same as the Iruma and Koma Rivers. These rivers flow toward the northeast into the Arakawa Lowland and then toward the southeast as well as the rivers in the valleys of the Omiya Plateau. There are many streams which flow across the Omiya Plateau from the northwest to southeast. The central part of the Kanto Tectonic Basin had occupied in the northern part of Tokyo Bay and many valleys had developed in the Omiya Plateau when the maximum gradient of flat surface had southeast trend. Gradient of the terrace in the Omiya Plateau had shifted to the northeast since then. Koga City in the southwestern part of Ibaraki Prefecture and Kurihashi Town in the northeastern part of Saitama Prefecture were in the central part of the Kanto Tectonic Basin. But the rivers had developed in the precedent age. Thus, the central part of the Kanto Tectonic Basin had shifted from the northern part of Tokyo Bay to the Koga and Kurihashi areas. The maximum gradient of the Omiya Plateau is in the northwest trend at present. This fact is represented by the displacement map of the surface of marine Shimosueyoshi Terrace of Naruse (1966) (Fig. 7-5). The surface of marine Shimosueyoshi Terrace was almost horizontal, because it was the sea floor. The surface of the terrace was deformed later as shown on the contour map in Fig. 7-5. Kaizuka (1964), and Kakimi and Suzuki (1974) mentioned that the conscious of the

subsidence of the floor of the Tokyo Bay, and named it "the Basing Movement of Tokyo Bay". The marine Shimosueyoshi Terrace of the Musashino Plateau, Yokohama area and the Shimosa Plateau along the coast of Tokyo Bay inclines toward Tokyo Bay, besides the Shimosa Plateau along the northeastern coast of Tokyo Bay form a watershed between the Tokyo Bay and the Tone River drainage basins.

The center of the Kanto Tectonic Basin was shifted after the formation of the Shimosueyoshi Terrace in Tokyo Bay to the Koga and Kurihashi areas north of Tokyo Bay. The area of the Shimosueyoshi Terrace is surrounded by the contour lines of 20 m in the northern part of Tokyo Bay and by the 10 m in the Koga and Kurihashi areas (Fig. 7-5). The Shimosueyoshi Terrace is covered by the airborne volcanic ash from the actual altitudes. If the marine Shimosueyoshi Terrace (about 125,000 y. B.P.) was formed at the several meters above the present sea level (Chappell, 1974 and Bloom *et al.*, 1974), both areas are neither subsided nor uplifted after the formation of the Shimosueyoshi Terrace. It was kept stable (Kaizuka *et al.*, 1977) and the both areas were emerged. Estimations of Chappell (1974) and Bloom *et al.* (1974) are the values in the mobile belt.

The streams in the Hiki Hills flow to the southeast. The streams in the Kushibiki and Honjo Plateaus, north of Yorii Town flow to the northeast. These show the trend of the maximum gradient of the rivers. Judging from the drainage pattern, the area between the Musashino and Iruma Plateaus, and the Iwadono Hills, between the Omiya and Higashimatsuyama Plateaus, Hiki Hills, between the Kushibiki and Honjo Plateaus show the different drainage pattern, respectively.

The Tama Hills corresponds to the uplift area between the Kanto Tectonic and Sagami Sedimentary Basins (Fig. 7-6). Both basins are probably connected with the basining movement of the Kanto Region.