CONCERNING SPECIAL CENTERS OF PROJECTION FOR AN ALGEBRAIC SPACE BRANCH*

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1. *Introduction.* If one projects a branch of an algebraic space curve from a point (a, b, c) onto a plane and considers a, b, and c as parameters, one obtains a plane branch possessing a development whose coefficients are rational functions of a, b, and c. If it now be assumed that no relations exist between the parameters a, b, and c, this plane branch will have a certain generic composition which will change only for special values of these parameters which satisfy certain relations between the coefficients of the development. A center of projection is said to be generic with respect to a space branch and the corresponding plane projection to be a generic projection, provided the latter has a generic composition in the sense just defined.

Until recently, it had been thought that the composition of a space branch was the same as that of its generic plane projection.† However, it has been shown by example that the composition of a space branch is not necessarily the same as that of its generic projection.‡

In view of this it was deemed of interest to investigate the conditions under which a center of projection is generic with respect to a given space branch. In what follows, these conditions are determined and an explicit formulation for the locus of non-generic centers of projection is given.

2. *A Theorem on Plane Branches.* It will be convenient first to establish a theorem concerning the composition of a plane branch. The equation of such a branch, with origin at the origin of coordinates, may be written in the following manner:§

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† See, for instance, Enriques-Chisini, *Lezioni sulla Teoria Geometrica delle Equazioni e delle Funzioni Algebriche*, vol. 2, p. 559.

‡ O. Zariski, *Algebraic Surfaces*, Ergebnisse der Mathematik und ihrer Grenzgebiete, vol. 3, no. 5, pp. 11–12.

§ For a detailed discussion concerning such parametric representations, see Enriques-Chisini, op. cit., vol. 2, p. 330 et seq. The notation used here is due to Zariski: O. Zariski, op. cit., p. 7.