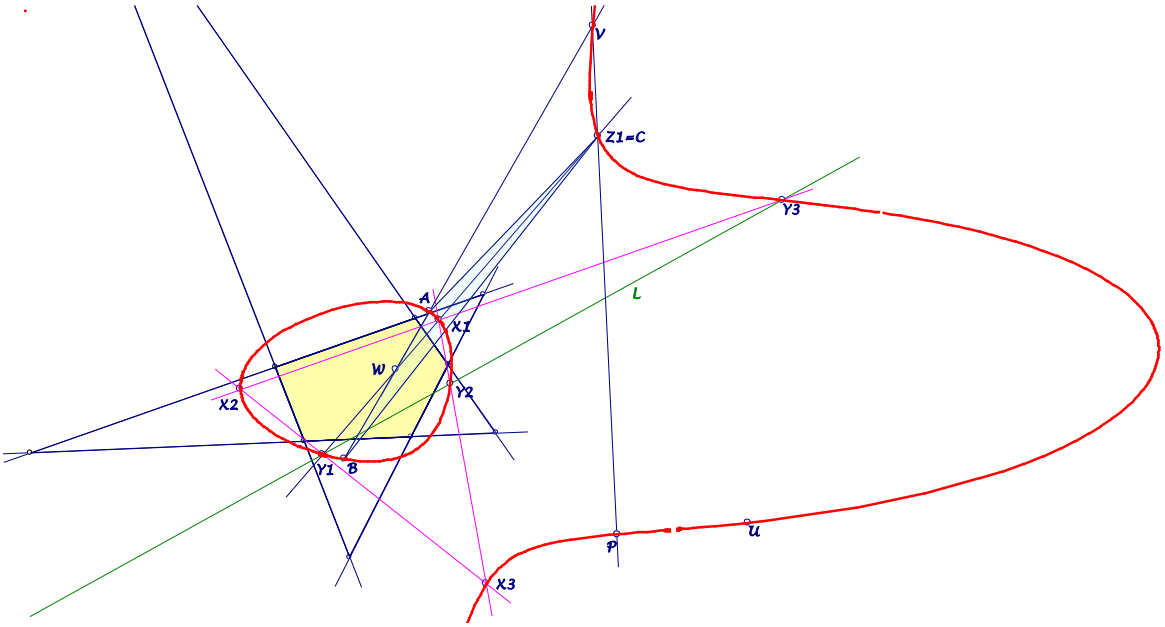
EQF-Note 2017-11-25

Background for these notes is:
Chris van Tienhoven:
Encyclopedia of Quadri-Figures and Poly Geometry
http://www.chrisvantienhoven.nl/

Pivotal Isocubic for a 5L

A point X has wrt the five quadrilaterals of a 5L - in the sense of QFG#1516 - five dual lines, which can have a common point Y. Points X with this property Φ give a pivotal isocubic, which bears also the common points Y in a reciprocal relation.



We start with a *5L* and an arbitrary line *L*
… and points on *L* with their 5 dual lines wrt the *4L* of the *5L*.
The loci of intersections of the five dual lines
… are conics with three common points X_1, X_2, X_3,
… which have the property Φ
… as well as the common points Y_1, Y_2, Y_3,
… with $Y_i = L \cap X_jX_k$.

The points X_i and Y_i for a line pencil give a construction for the curve of the points with property Φ.

- **Points with the property Φ give a pivotal isocubic.**

Now we repeat the procedure for one line $X_iY_i = L$
… and get three *X*-points on the cubic: X_i, Y_i and a new point *P*,
… which is the tangential of X_i and Y_i wrt the cubic,
… and will be the pivot.

The common point of the dual lines of P is a new point Z_i,
… which is the 3rd intersection of X_iY_i and the cubic,
… and will be one vertex for a reference triangle.

Once more we repeat the procedure for the line $PZ_i = L$
… and get three X-points on the cubic: P, Z_i and a new point U,
… which is the tangential of P and Z_i wrt the cubic.
The common point of the dual lines of U is a new point V,
… which is the 3rd intersection of PZ_i and the cubic.

Let W be the 4th harmonic point of Z_i wrt X_i and Y_i.

Once more we repeat the procedure for the line $VW = L$
… and get three X-points: V and two new points A and B,
… which give with $C = Z_i$ the reference triangle.

In this way the cubic is a pivotal isocubic
… with reference triangle ABC,
… an isoconjugation with fixed points X_i and Y_i
… and the pivot P.

Eckart Schmidt
http://eckartschmidt.de
eckart_schmidt@t-online.de