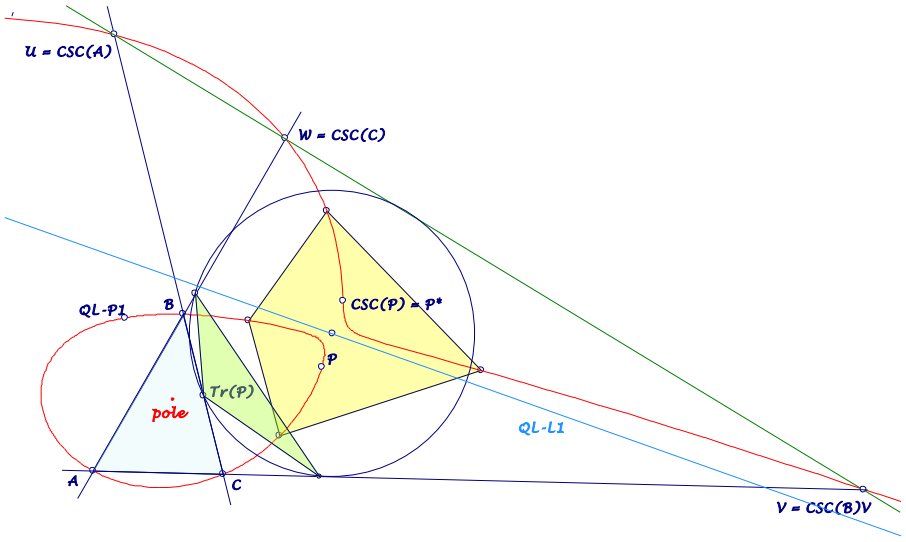
EQF-Note 2016-05-22

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

QL-Cu1 as Nonpivotal Isogonal Cubic

QL-Cu1 is not only self-isogonal wrt the QL-triangle components. Here a new aspect shall be researched for reference triangles ABC with vertices in the CSC-images of three collinear points of QL-Cu1.



Preliminary remark: Let F_i be the foci of a *QL*-inscribed conic, centered in *QL-L1* ∩ *QL-L6*, which are in the unipartite case of *QL-Cu1* the points *QL-2P2*.
In *QFG*-messages 1425 and 1433 we find for the reference triangle $F_1.F_2.QL\text{-}P1$:

- ***QL-Cu1* is isogonal invariant wrt $F_1.F_2.QL\text{-}P1$.**
- **In the unipartite case of *QL-Cu1* the *CSC*-image of *QL-Cu1*-points is the isogonal conjugated wrt $F_1.F_2.QL\text{-}P1$.**
- **In the bipartite case of *QL-Cu1* the cubic is a pivotal isogonal cubic of $F_1.F_2.QL\text{-}P1$ with pivot in the point at infinity of *QL-L1*.**

Special generalization:

- ***QL-Cu1* is isogonal invariant wrt each triangle *ABC*, whose vertices are the *CSC*-images of three different collinear points *U, V, W* on *QL-Cu1*.**

If one of the collinear points is *QL-P1*, the triangle degenerates.

- **Wrt *ABC* the isogonal conjugate of *QL-Cu1*-points is the *CSC*-image.**

- **Wrt *ABC* the cubic *QL-Cu1* is**
  … a nonpivotal isogonal cubic
  … with pole in the *ABC*-trilinear pole of *UVW*.

- ***QL-Cu1* is the locus of points, whose pedal circle wrt *ABC* is centered on *QL-L1*.**

The last property is a consequence of *EQF-Ref [17b] 1.5.5*.

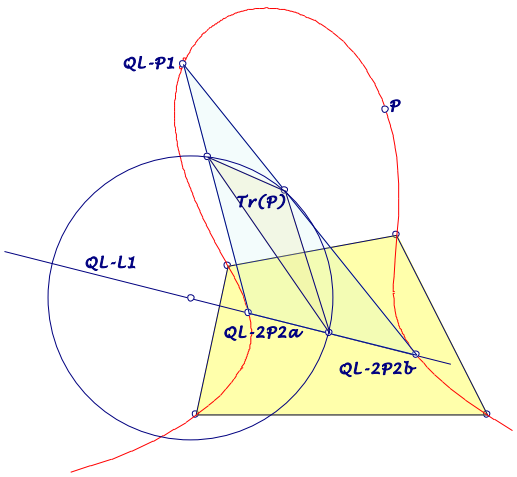
The pedal circle of *QL-P1* wrt *ABC* degenerates to the Simson line, orthogonal *QL-L1*. The pedal circles of *CSC*-partners coincide.

Special triangles *ABC*

If one of the collinear points *U, V, W* is the point at infinity of the asymptote, we get a triangle *ABC* with one side parallel *QL-L1* as reflection of *UVW* in *QL-L1* and the opposite vertex *QL-P1*.
If *U* and *V* of the collinear points are *CSC*-partners, we get the triangle *ABC = U.V.CSC(W).*

Example for *QL-Cu1* unipartite: For *U, V* in *QL-2P2* and *W* in the point at infinity of *QL-L1* we get *ABC = QL-2P2a.QL-2P2b.QL-P1*.

- **In the unipartite case of *QL-Cu1* the cubic is the locus of points whose pedal circle wrt *QL-2P2a.QL-2P2b.QL-P1* is centered on *QL-L1*.**



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