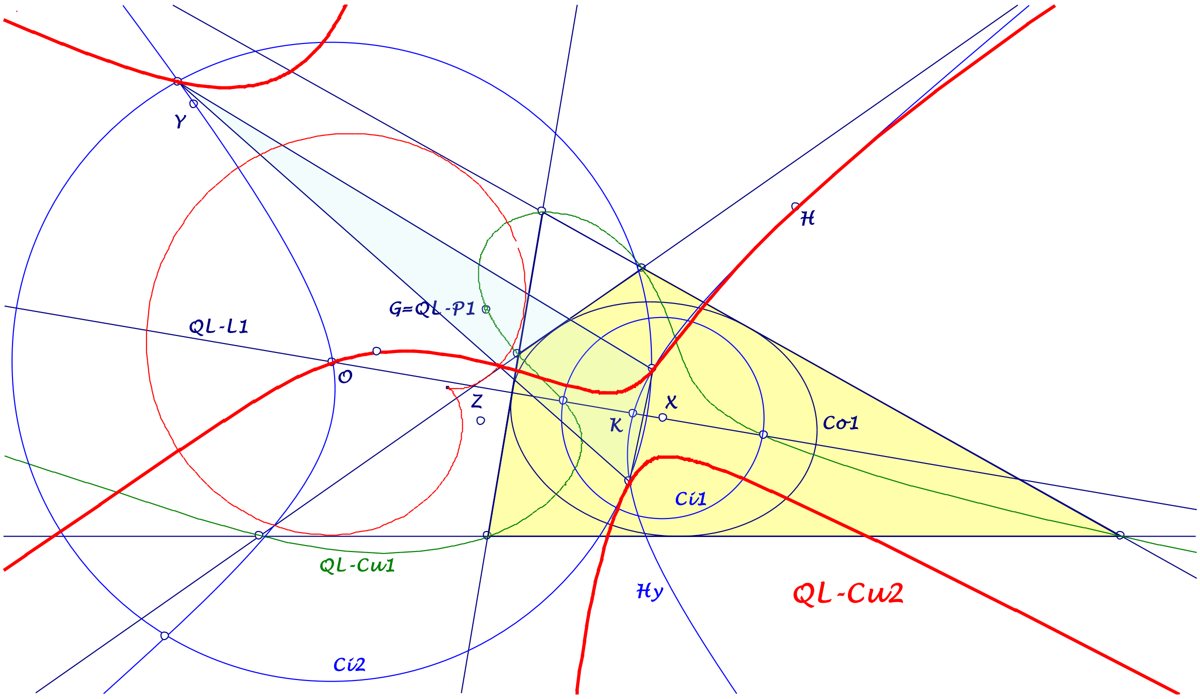
EQF-Note 2014-05-11

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

Drawing Eckart's Cubic *QL-Cu2*

If a quadrilateral is tangent to a circle, QL-Cu2 is a nodal cubic, described by Bernard Gibert (EQF-Ref.17d) with a construction. If the quadrilateral isn't tangent to a circle here is a possibility to draw the cubic by reference triangles in approximation (see QFG-message 161). Up to now there is no general construction of QL-Cu2.



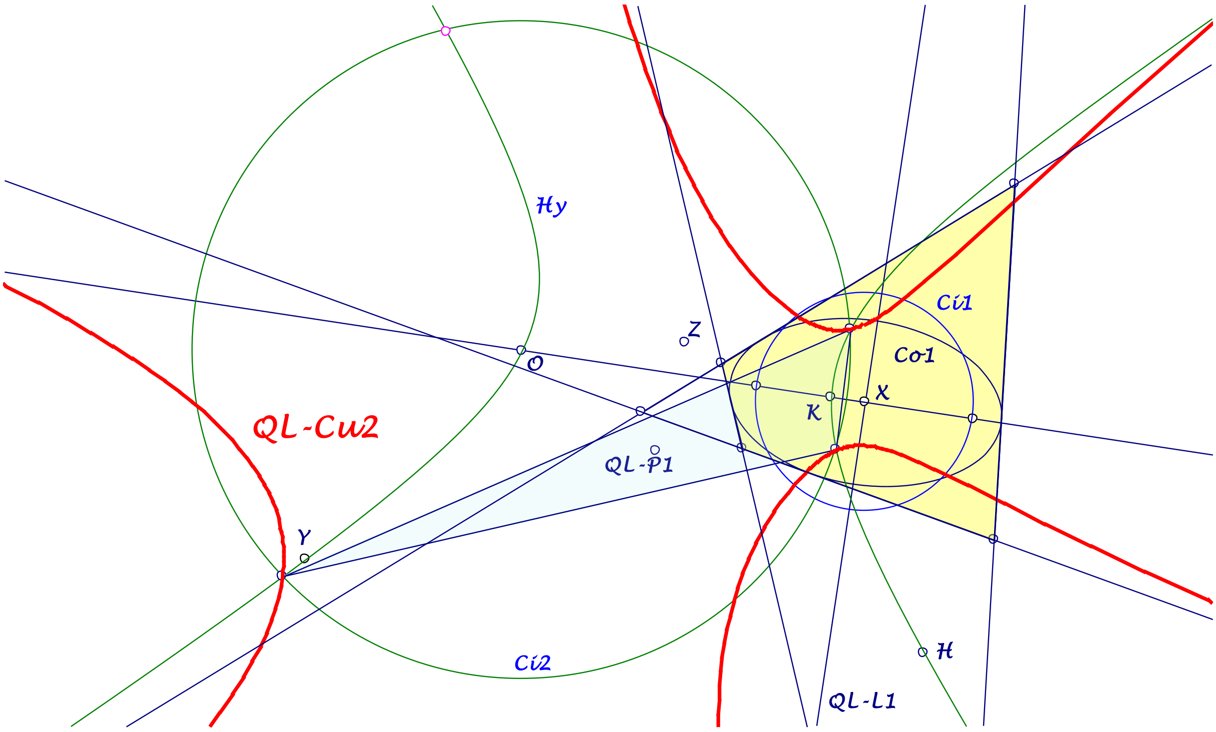
- *X* is the intersection of *QL-L1* and *QL-L6*.
- *Co1* is a conic with center *X* and tangent to the *QL*-lines.
- *Ci1* is the Thales circle for the foci of *Co1*.
- *O* is a variable point on the axis of *Co1*.
- *Ci2* is a circle round *O* orthogonal *Ci1*.
- *K* is the inverse of *X* wrt *Ci2*.
- Let *G* = *QL-P1*, *H* = *hG,-2(O)*, *Y* = *hG,-2(K)*.

- *Hy* is the orthogonal hyperbola through *O, H, K, Y* with center *Z*.

- **Chose *O* on the axis of *Co1* so that the reflection of *H* in *Z* lies on *Ci2*.**

- Then the further intersections of *Hy* and *Ci2* give a reference triangle. *G, O, H, K, Y* are finally *X2, X3, X4, X6, X69* of the reference triangle.

- If *X* lies outward the Schmidt Circle (see *QL-Tf1*), *QL-Cu2* is the ***McCay* cubic *K003***, if *X* lies inside the Schmidt Circle *QL-Cu2* is the ***Kjp* cubic *K024*** of the reference triangle (*EQF-Ref.17b*).



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