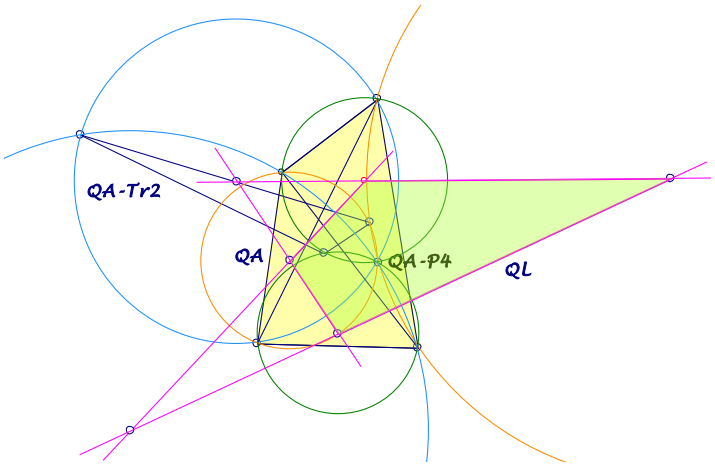
EQF-Note 2015-07-13

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

QL-Geometry for a Quadrangle

The bisectors of vertices of a quadrangle QA and the Isogonal Center QA-P4 lead to a quadrilateral QL. Here some relationships between the geometry of QA and QL are presented, but only CABRI-controlled.



For a quadrangle *QA* the six circles through P_i, P_j, *QA-P4* intersect in the vertices of the Miquel Triangle *QA-Tr2*. The midpoints of these circles lie on four lines, defining a quadrilateral *QL*. The lines of the *QL* are the bisectors of the vertices of *QA* and *QA-P4*.

It will be interesting, to compare the geometry of the *QL* with the geometry of the *QA*. Here some aspects (The prefix *QA* and *QL* belong here to different objects!):

- **The Miquel Point *QL-P1* is the midpoint of *QA-P4* and *QA-P9*.**

- **The Newton Line *QL-L1* is the bisector of *QA-P3* and *QA-P4*.**

- **The Steiner Line *QL-L2* is a parallel to *QA-L4* through the center of the circumcircle of the Miquel Triangle *QA-Tr2*.**

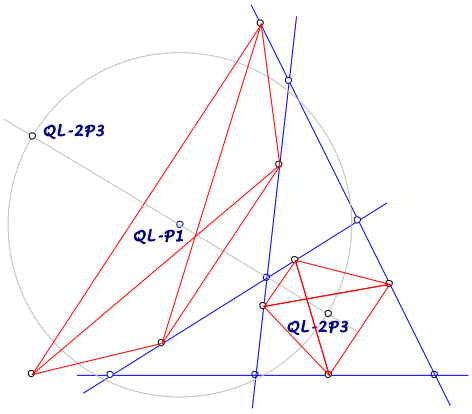
- **The Pedal Line *QL-L3* is a parallel to *QA-L4* through the midpoint of the midpoint of *QA-P4.QA-P9* and the center of the circumcircle of *QA-Tr2*.**

- **The 1st Steiner Axis of the *QL* is *QA-P4.QA-P9*.**

- **The *CSC*-fixed points *QL-2P3* are *QA-P4* and *QA-P9*.**

- **The cubics *QL-Cu1* and *QA-Cu1* have orthogonal asymptotes.**

Final remark: If we begin with a quadrilateral *QL* and consider the *CSC*-fixed points *QL-2P3*, these points are the Isogonal Centers *QA-P4* of their pedal-quadrangles wrt *QL*. The *QA*-Miquel Centers *QA-P9* of these pedal-quadrangles coincide in the Miquel point *QL-P1* and the Gergonne-Steiner Points *QA-P3* lie on the Newton Line *QL-L1* of the reference quadrilateral.



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