and geochronological data (Árkai 1977, 1983, Árkai et al. 1981, 1995), the Cretaceous (Eoalpine) tectonometamorphic evolution of these units could be reconstructed as follows:

D_1: Formation of a bedding-parallel first foliation (S_{0-1}) associated with intensive flattening in the bedding plane as a consequence of an early tectonic event (F_1 folding and/or nappe thrusting?). Since this deformation is preserved mostly in small fabric-relics, its vergency and other structural characteristics are still unclear.

D_{2a}: Folding of the bedding-parallel foliation (S_{0-1}) into upright to moderately inclined, close to tight (locally isoclinal), subhorizontal to gently plunging, NW-vergent F_2 folds. A well-developed, generally SE-dipping, penetrative axial plane foliation (S_2) was formed during this event. Fold axes trend mostly to NE-SW, in the eastern part of the Szendrő Mts. to E-W, as indicated by the orientation of the intersection lineation of S_{0-1} and S_2 as well. The bedding-parallel foliation is heavily transposed into the "main" S_2 foliation in many outcrops, suggesting intensive flattening during progressive deformation. Structures connected to this phase of deformation are predominant in both studied units.

The D_1 and D_{2a} events must have taken place on the prograde stage (at relatively high-temperature) of the Cretaceous metamorphism as indicated by the intensive crystalplastic deformation of calcite and quartz associated with both S_{0-1} and S_2 foliations, and posttectonic chloritoid (with respect both to S_{0-1} and S_2 foliations) which can be related to the thermal peak of metamorphism. Peak metamorphic conditions can be estimated at about 300–350 °C in the Uppony unit, and 400–450 °C in the Szendrő unit. White mica cooling ages are in the range of ca. 110–120 Ma, while zircon FT data yielded ages about 100 Ma.

D_{2b}: Ductile simple shear occurred after/or at the late stage of F_2 folding, resulting in the formation of a well-developed, either dip-slip or nearly horizontal, grain-scale stretching lineation, developed mainly in the carbonate rocks. The resulting N(W)-vergent thrusting (generally with a slight sinistral component) and the coeval NE-SW trending sinistral strike-slip movements suggest a transpressional tectonic regime. However, no large-scale mylonitic zones could be observed in the studied units.

D_3: A second, less intense folding (F_3) produced locally a non-penetrative crenulation cleavage (S_3). F_3 fold axes are generally also NE-SW (E-W) trending, and gently to moderately plunging. This folding event is especially characteristic in the Szendrő unit where map-scale F_3 syn- and antiforms were also formed during this phase. This deformation occurred on the retrograde path of the metamorphic evolution, at significantly lower temperatures (<270–300 °C) than the D_1–D_{2a-b} events, as indicated by the very minor associated crystalplastic deformation of quartz and calcite.

D_4: Lastly, steeply plunging F_4 kink folds were formed, related mostly to N-S or NW-SE trending, semi-ductile shear zones accompanied frequently by calcite veins with en-echelone geometry. No foliation developed during this deformation phase, which indicates low deformation temperatures (≤200 °C) on the retrograde path. The "anomalous" orientation of all previously formed structures in certain zones can be attributed to the passive rotation during this deformation, or – in certain cases – later Tertiary block rotations.

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New Paleomagnetic and Magnetic Susceptibility (AMS) Data on the Mórágy Granite (SW Hungary) – Implications for Ductile and Brittle Deformation

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The Mórágy Granite is a Variscan granite pluton (~350 Ma, Klötzli et al. 2004) situated in SW Hungary (Mórágy Hills, SE of the Mecsek Mts) built up mainly by metaluminous to slightly peraluminous, K-Mg-rich, microcline megacryst-bearing, medium-grained, biotite-monzogranites, and quartz monzonites (Buda 1985). The monzogranitic rocks contain generally oval-shaped, variably elongated mafic enclaves (predominantly amphibole-biotite monzonites, diorites, and syenites) of various size (from a few cm to several hundred metres) reflecting the mixing and mingling of two magmas. Feldspar-quartz rich leucocratic dykes (at least three generations) belonging to the late-stage magmatic evolution crosscut all of the previously described rock types.

Paleomagnetic measurements were carried out in order to determine the paleomagnetic directions on a large variety of rock types having different positions in the pluton. The major rock types were sampled from boreholes drilled in the frame of the Hungarian National Research Project on the final disposal of low and intermediate level radioactive waste. The orientation of the samples was determined using the ImaGeo corescanning system and the adjoining CoreDump evaluating software developed in the Geological Institute of Hungary (Maros and Palotás

2000, Maros and Pásztor 2001). The samples represent a large depth interval (50–500 m). The average declination of more than 50 oriented samples is approx. 180°, the inclination is about 10° indicating low paleo-lattitude position of the Mórágy Granite in the Carboniferous. Our results are in good agreement with the previous data of Márton and Márton (1989) on "granite" samples from surface outcrops. The new data imply that there was no significant time difference between the emplacement of the pluton and the crosscutting leucocratic dykes from paleomagnetic point of view.

The magmatic complex suffered regional metamorphism resulting in the formation of an (E)NE-(W)SW striking, steeply dipping (generally >80°) foliation (S_1), that is overprinted in many places by a less steep (dip angle between 40–75°) foliation (S_2) transposing S_1 foliation in various degrees. Both foliations dip in the same direction, mostly to the NW, in certain zones to the SE, which might reflect a late folding event (Maros et al. 2004, Király and Koroknai 2004).

Rarely occurring, narrow (cm to some dm scaled) mylonitic shear zones are mostly parallel to the S_2 foliation (Maros et al. 2004). Kinematic indicators show top-to-the-(S)SE (or top-to-the-N in the case of SE dipping foliation, respectively) thrusting in the XZ sections. However, occasionally oblique to pure strike slip movement (both sinistral and dextral motions) occur as well. The mylonitic shear zones occur preferentially in fine-grained aplites/micrograntes suggesting strong strain-partioning between these rheologically weaker leucocratic dykes and the surrounding host rocks at (upper-)middle crustal levels.

The anisotropy of magnetic susceptibility (AMS) in the Mórágy Granite was also measured in oriented samples collected from two boreholes (Üh-26 and Üh-29). The results gave the orientation of the magnetic fabrics to a depth of 400 meters, hence, a relatively large volume of rock mass could be checked for the homogenity. Although the anisotropy (max/min susceptibility) is rather low (<1.2), a consistent relationship was found between the orientation of the foliation formed by solid-state deformation during metamorphism and the magnetic fabrics: the minimum susceptibility is practically perpendicular to the foliation in all samples, clearly indicating that magnetic fabrics reflects the influence of regional metamorphism which obliterated the previous magnetic fabrics formed at the magmatic stage. However, the paleomagnetic directions seem not to be changed during the metamorphism.

Finally, a case study demonstrates the interrelationship between paleomagnetic directions and late brittle tectonics in the pluton. The paleomagnetic data from two nearby drillhole sections (Üh-2 and Üh-22) suggest a slight block tilting on the different sides of a strike-slip zone of probably Miocene age.

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Surface Exposures of Pre-Mesozoic Basement in the Ipeľ Depression: Geological Structures, Polymetamorphism, and CHIME Dating of Monazite

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The Pre-Cenozoic basement of Ipeľská kotlina Depression is built up by Veporic Unit – one of the principal tectonic units of the West Carpathians. The Veporicum Unit has been divided into two parts – the Southern and the Northern Veporicum, which was based essentially on the different lithostratigraphic records of the Mesozoic cover formations (Biely 1964, Biely et al 1996). Generally, the areal extent of cover rocks was strongly reduced by erosion. Veporicum in the basement of Ipeľská kotlina Depression corresponds to the Southern Veporicum part as being shown by geographic space relations and many analogous geologic features. Basement rocks