Py_{16} Spe_8 Gr_2 in rim. The second one displays reversed Ca evolution with the composition Alm_{71} Py_{12} Spe_{15} Gr_2 in core and Alm_{72} Py_{13} Spe_{12} Gr_3 in rim.

The P-T conditions estimated from the sillimanite zone: metapelite garnet–biotite thermometry (Williams and Grambling 1990) indicate temperatures between 606–623 °C and garnet–plagioclase–aluminium silicate–quartz (GASP) geobarometry (Koziol and Newton 1988) shows pressures of 4–5 kbar. These data, however, were very likely reequilibratied during cooling. The peak temperature based on the mineral association (Grt–Bi–Sill) was higher by 30–80 °C at the pressure of 5 kbar. The couple garnet–biotite from the staurolite zone indicates temperatures between 483–474 °C at pressures of 4 kbar.

Metamorphic zoning in the PCU is a product of at least two metamorphic events. The Barrovian metamorphism under conditions of the amphibolite and epidote amfibolite facies was locally overprinted by contact metamorphism.

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Rhyolite Related to Panafrican Granite in the Brno Massif (Czech Republic)

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The Brno massif is Cadomian, mostly magmatic unit situated at the eastern margin of the Bohemian Massif. It is formed by East and West granodiorite areas, which are tectonically separated by the Central Basic Belt. Whereas eastern part of the Brno massif is built by I-type granodiorites and tonalites, the granites, granodiorites, tonalites and diorites of the western part are more akin S-type. The Central Basic Belt consists of the (meta-) basalt subbelt i the east and the diorite one in the west (Zapletal 1928).

Rocks of the Brno massif are cut by rhyolitic subvolcanic dykes, whose thicknesses typically range from first tens of cms up to tens of metres. A well-known example of these dykes is exposed in the old Želešice quarry. Remarkable spatial and textural relations were found here between the rhyolites and S-type granites in rare stocks which intruded hornblendite of the diorite belt. The rhyolites are calc-alkaline with clear affinity to a continental source (e.g., high K, Rb, strongly fractionated REE patterns and distinctly negative initial ε_{Nd} values - Ch. Pin, pers. comm.). The matrix is aphanitic, quartz and feldspars are common phenocrysts, biotite and amphibole are rare. Contamination of rhyolites is indicated by xenoliths of, and abundance of xenocrysts derived from, the mafic wall rocks.

There are no significant changes in chemical composition between rhyolites and granites. Variation diagrams point to a similar character of magmatic source as well as subsequent differentiation. Textural evolution from the hypautomorphic, equigranular granite to porphyritic rhyolite with sector zoning in feldspars and brecciated rocks indicates crystallisation of granitic magma during rapid pressure drop at high crustal levels.

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Comparison of Magnetometric and Geometric Methods of Strain Analysis of Culmian Conglomerates and Graywackes, Drahanská Vrchovina Upland

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The Drahanská vrchovina Upland in the easternmost part of the Rheno–Hercynian Zone is built up of the Lower Carboniferous flysch represented by conglomerates, graywackes, siltstones and shales. Pebbles from the polymict Luleč and Račice coglomerates (located in the SE part) and the Kořenec conglomerates (located in the westernmost part) were used as strain markers for the geometric strain analysis. Anisotropy of magnetic susceptibility (AMS) was measured on samples from the graywacke matrix of the conglomerates. The magnetometric and geometric methods of strain analysis were compared.

Final fabric ellipsoids derived from conglomerete pebbles are oblate, except two sampling sites where prolate ellipsoids were found. The degree of ellipticity ranges from 28 to 70 %. Minimum principal axes of final fabric ellipsoids correspond well to the poles to bedding. The minimum axes do not deviate from poles to bedding by more than 30°. The maximum axes trend N-S to NNE-SSW, the plunge angles do not exceed 20° (Havíř 1998).

Susceptibility ellipsoids are strongly oblate, the degree of AMS is generally weak (up to 3 %). Magnetic foliation poles cluster around the poles to bedding. The maximum tilt of magnetic foliation poles from bedding poles is 15°. Magnetic lineations are subhorizontal and trend N-S to NNE-SSW.

A correlation of various shape parameters of final fabric ellipsoids with the AMS ellipsoids was carried out. The shapes and orientations of final fabric ellipsoids and the AMS ellipsoids show evidence of depositional fabric for the SE part of the Drahanská vrchovina Upland. On the other hand, a partly deformation fabric was found in the Kořenec conglomerate in the westernmost part.

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The Magnetic Fabric in the Šumperk Granodiorite and its Tectonic Implications

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The Šumperk granodiorite represents a granitoid intrusion showing features of both magmatic and deformational fabrics. Its magnetic fabric was investigated on semi-oriented cores (with respect to the borehole axis) from two boreholes and on oriented specimens from four surface outcrops.

The bulk magnetic susceptibility of the Šumperk granodiorite is very variable, ranging from the order of 10^{-4} to the order of 10^{-2} (in SI of units). In strongly magnetic specimens, it is dominantly controlled by magnetite, while in weakly magnetic specimens it is also controlled by paramagnetic silicates (biotite). Secondary effects, as chloritization and hematization, have only negligible influence on bulk susceptibility. The above magnetic minerals were identified through the investigation of the temperature variation of bulk susceptibility. The magnetization curves of strongly magnetic specimens correspond very well to those of magnetite, while in weakly magnetic specimens paramagnetic hyperbola can be clearly observed.

The anisotropy degree of the Šumperk granodiorite is relatively and the magnetic fabric is clearly linear both in borehole and in surface outcrops. Such a magnetic fabric is rare in granitic rocks where planar magnetic fabrics are very frequent. In surface specimens, the magnetic lineations, very well concentrated along its mean direction, are oriented WSW-ENE and plunge WSW 10° to 20°. The magnetic foliation poles are concentrated less perfectly, but still relatively well, moderately plunging SE. In borehole specimens, the plunge of magnetic lineation is also gentle (about 15°). The dip of magnetic foliation is variable, ranging from gentle to steep.

In order to better discover the origin of the magnetic fabric in the Šumperk granodiorite, we studied also the magnetic fabric of phyllonite and metagranite surrounding the Šumperk granodiorite and having no doubt deformational fabric. The anisotropy degree in those rocks is also relatively strong, the magnetic fabric varies from moderately linear to moderately planar. The magnetic foliation is parallel to the mesoscopic metamorphic schistosity and magnetic lineations are well grouped, gently plunging SW. The orientations of both magnetic foliation and magnetic lineation in phyllonite and metagranite are very near those in the Šumperk granodiorite. Consequently, the magnetic fabric of the Šumperk granodiorite was controlled by principally the same processes as those controlling the origin of the magnetic fabric in the phyllonite and metagranite, i.e. ductile deformation. The unsolved problem is the rheological state of the Šumperk granodiorite during this process. In principle, the tectonic processes could affect either the solidifying magma or the already solidified magma.

Youngest Tectonic Activity on Faults in the SW Part of the Most Basin

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The problem of the presence and significance of tectonic movements of Quaternary age in N Bohemia has been discussed since the 19th century. While many authors assume extensive tectonic activity in the Quaternary (e.g., Kopecký 1970, 1989; Malk-