was shaped by the Upper Miocene/Pliocene tectonic activity (Dyjor, 1995), related to folding and thrusting in the Carpathian Foredeep leading to the reactivation of old structures in the foreland.

The epi-Variscan cover in the northern peripheries of the Bohemian Massif may be generally divided into three sequences: Upper Carboniferous – Triassic, Middle–Upper Jurassic (now present as scarce relics) and Upper Cretaceous (Cenomanian – Santonian). The stratigraphic gaps, mainly in Lower Jurassic, Lower Cretaceous and in post-Santonian times, indicating sea regressions and breaks in sedimentation, are well correlated with corresponding orogenic events recorded in the Carpathians by Plašienka (1997), especially the closure of the Meliata–Halstatt ocean in the Late Jurassic and the closure of the Penninic–Vahic ocean in the latest Cretaceous to Early Tertiary. During these two periods of compression, the Bohemian Massif played a role of a flexured, foreland area affected by long-distance horizontal stresses (Ziegler et al., 1995) which were also transmitted to the north as far as the Polish Trough (Krzywiec, 2000). Thus, the Bohemian Massif may be considered as a rigid, forebulge segment in front of the northward propagating Alpine orogeny.

The above mentioned horizontal stresses in the Late Palaeozoic – Mesozoic cover produced several folds trending NW–SE to WNW–ESE, well visible in the North Sudetic Basin and the Intra-Sudetic Basin. Intensive fracturing led to the formation of prominent fault lines (many of them inherited after late- and post-Variscan extension) along which some basement blocks were squeezed, uplifted and then affected by erosion. The most spectacular proof of the shortening are inverse faults and even gently dipping thrusts (such as the Lusatian Thrust, Hronov–Poříčí T., border faults of the Nysa Garben (i.e., Zieleniec T., Młoty T., Krosnowice T.), Struga T., Wierzchosławice T., Jerzmanowice T., faults at the SW margin of the Sowie Mts. block, faults bounding the Czerwieńczyce Graben and others). Some of the horsts originated this way may be described as a “pop-up structures”. Displacements of the hangingwalls on the thrust planes have not been sufficiently estimated yet. Geophysical investigations suggest that dip-slip displacement magnitudes may have reached a few hundred meters but the total displacement magnitude may be greater as observed on sub-horizontal slickensides suggesting a strong strike-slip component during tectonic transport. Linking the origin of the compressional and strike-slip related structures with synchronously developed, NE–SW-trending extensional rift zones associated with Neogene volcanics (like the Ohře Rift), Cymerman (1999) postulated left-lateral Alpine transpression for the Sudety Mts.

While the Lower Cretaceous stage of regional uplift is difficult to assess due to nearly complete removal of the Jurassic strata, the total post-Santonian vertical movements may be well defined by taking the transgressive Cenomanian sediments as a reference horizon (Don, 1996). By comparing its deepest position in the North Bohemian Basin (c. 600 m b.s.l, Malkovský, 1987) and in the North Sudetic Basin (c. 800 m b.s.l., Wykroty N 14 borehole, Bossowski, 1991) with the highly positioned outcrops in the Orlickie and Bystrzyckie Mts. (c. 800 m a.s.l.), a given total vertical difference is greater than 1600 m.

There is a close relationship between Alpine, deep-seated faults and thrusts and the distribution of mineral and thermal waters in the Sudetes. A further detailed recognition of the present crustal activity within the fault network is also important for the identification of geohazards (seismicity) and location of hydrographic constructions.

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Magmatic Fabric Pattern of the Land’s End Granite (SW England): Comparative Study of AMS and Feldspar Phenocrysts Tensors

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Land’s End granite (274.5 Ma), the westernmost pluton of the Cornubian batholith (SW England), intrudes intensively deformed Upper Devonian metasedimentary and metavolcanic rocks of The Mylor Slates Formation. Diverse structures document NNW regional Upper Carboniferous to Permian extension associated with the emplacement of the Land's End granite, involving NW or SE-dipping ductile zones and listric normal faults, and NW–SE-striking strike-slip faults. A detailed field mapping revealed a complex magmatic flow pattern defined by the grain size, abundance and alignment of alkali-feldspar phenocrysts exhibiting metre-scale variations. These variations are often connected with the presence of stoped blocks and local turbulences generated by thermal convection.

We provide information on the relationship of internal structures of the Land's End granite with respect to the country rocks. The work is essentially focused on the anisotropy of magnetic susceptibility (AMS), feldspar and biotite shape preferred orientation (SPO) determined by textural reflexion goniometry in comparison with mesoscopic fabric pattern.

Two main textural varieties occur within the Land's End granite: coarse-grained, megacrystic biotite granite in the upper part of the intrusion and medium- to fine-grained, sparsely megacrystic granite mingled with tourmaline granite representing the innermost part of the pluton. Generally subhorizontal, homogeneous and well developed magmatic fabric of the megacrystic granite is defined by the preferred orientation of subhedral K- feldspar and biotite within fine-grained matrix. The dominant feature is the NW or SE moderately dipping foliation bearing subhorizontal magmatic lineation. Foliations become parallel to the stoped blocks within one metre from the contact. Magmatic fabrics are cut by later aplite and subvertical tourmaline–quartz dykes. The sparsely megacrystic granite shows apparently weak magmatic fabric defined by preferred orientation of alkali-feldspar, plagioclase and biotite. Numerous features related to local thermal convection disturb the zones of relatively stable moderate to subvertical NW–SE- or NE–SW-striking magmatic foliations.

The granite shows low degree of AMS (carried by the biotite as proved by thermomagnetic curves) and predominantly oblate shapes of magnetic ellipsoid. Magnetic foliations are mostly subhorizontal, bearing either NNW–SSE- or ENE–WSW-orientated magnetic lineations. The variations in lineation directions are related to the intensity of magmatic fabric or to the margins of stoped blocks.

Based on the above mentioned assumptions, we suggest that magmatic fabric of the intrusion in the roof represented by megacrystic carapace is controlled by regional extensional tectonics. The movements of the roof were completely coupled with the flow of underlying granite; as a result, both tensional and strike-slip movements are reflected by flowing magma. In addition, homogeneous magmatic fabric is locally perturbed by stoped blocks. The inner part of the pluton represented by sparsely megacrystic granite shows unclear relationship to the regional tectonic pattern. This part was decoupled from the host-rock deformation, thus reflecting internal magmatic processes (thermal convection, magmatic surges) without any relationship to regional tectonics. According to the AMS and goniometry data, we assume that the individual subfabrics defined by preferred orientation of each mineral reflect different increments of strain and crystallization history of cooling magma.

Structural Styles of Basin Formation and Inversion – Introduction

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Although studies on development and inversion of the sedimentary basins could rely on very different datasets and methods they share common goal – as complete as possible understanding of various tectonic processes that control subsidence and uplift within the basin. In the following paper selected examples derived from the on-going studies of various sedimentary basins in Poland will be used in order to visualise various approaches to the studies of sedimentary basin's development and inversion. Detailed accounts of particular research projects will be given in separate presentations.

Tectonic zones responsible for sedimentary basin's subsidence and inversion could be often observed on gravity and magnetic data, and regional analysis of potential fields could yield important information on location of crustal fault zones. Recently completed integration of gravity and magnetic data with results of seismic interpretation provided crucial information on the role of the SW margin of the East European Craton (EEC) for the Mesozoic development and inversion of the Mid-Polish Trough (MPT). EEC SW margin, clearly defined – at least at the upper crustal level – by potential field data, focused both extension and inversion in Mesozoic times.

Numerous examples of different structural styles of subsidence, inversion and related syn-kinematic depositional patterns were provided by seismic reflection data. Within the Mid-Polish Trough, numerous structures were identified that point to different processes for MPT's subsidence and inversion. Within the Pomeranian (NW) MPT's segments, due to the presence of thick Zechstein evaporates, significant decoupling between the pre-Zechstein basement and post-Zechstein sedimentary infill led to development of various structures within the Mesozoic succession only partly related to the basement fault zones. Identified examples include e.g. Oświno structure located along the SW MPT's margin and Bielica structure located along the NE MPT's margin. In central MPT's segment (Kłodawa region), due to more intense basement's extension less significant decoupling took place, and more direct relationship between basement fault zones and Mesozoic structures could be observed. Within the SE MPT's segment, due to lack of Zechstein evaporates, direct relationship between subsidence and inversion zones within the basement and sedimentary infill could be documented using seismic reflection data. Some of these fault zones were subsequently reactivated within the Carpathian foredeep basin during Miocene collision of the Outer Carpathians.

Formation and inversion of sedimentary basins could also be studied using well data. In particular, dipmeter data could