well imaged seismically by its highly reflective nature which probably is due to the intercalation and imbrication of metabasalt and metasediment sequences from the former continental rise and the adjacent oceanic basin.

Late–orogenic kinematics of the Rhenish Massif involves oblique convergence and dextral strike slip along its southern suture during the early Upper Carboniferous. Postorogenic molasse deposits mark the onset of gravitational collapse of the thickened Variscan crust during the late Upper Carboniferous and the Permian, leading to the Saar–Nahe half graben on the former suture which resulted from inversion of the collisional structures.

The cross section shows a general increase of strain to the southeast in discrete steps across major thrusts. Net orogenic shortening of the upper crust of the fold and thrust belt is approximately 42%. It is mainly achieved by folding and tectonic stacking of the deformed basin filling. Overall shortening values vary between 10–30% at the northern front to 60–70% at the southern internal margin of the belt. The contribution of distributed ductile deformation – as recorded in the finite strain data – to overall horizontal shortening reaches values between 0% (orogenic front) and 50% (southern rim of the Massif).

THE TECTONOMETAMORPHIC EVOLUTION OF THE WESTERN PART OF THE TEPLA–BARRANDIAN (BOHEMIAN MASSIF, CZECH REPUBLIC)

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The western part of the Teplá–Barrandian terrane (TB), a main constituent of the Central European Variscan internides, consists of Upper Proterozoic siliciclastic sediments and volcanics both of which are affected by Cadomian and Variscan tectonometamorphic imprints. A characteristic feature of this area is the increase of metamorphic grade from E (very–low grade) towards the W and NW where Barrovian–type amphibolite facies conditions prevail. The metamorphic zoning indicates crustal tilting towards the center of the TB where Cadomian basement rocks are unconformably overlain by Cambrian to Mid–Devonian rocks (Barrandian syncline). With increasing metamorphism the amount of late Cadomian and Variscan plutonic rocks increases considerably.

Structural investigations of the Cadomian basement rocks clearly show that in low–grade metamorphic areas the Cadomian deformation is well preserved whereas in the higher metamorphic parts the latter are pervasively overprinted by Variscan structures. In order to separate the Cadomian from the Variscan phases, investigations of lower greenschist facies rocks, affected by contact metamorphism of Cambrian plutons, have proved to be most suitable.

The **Cadomian** orogeny includes 2 deformation phases (D_1, D_2) (see Fig.). D_1–structures are preserved as relics only. Thus, its kinematics and metamorphic conditions are difficult to ascertain. In areas of weak Variscan overprint, D_2–fold axes strike E–W. During D_2 the main foliation of the greenschist facies rocks (S_2) has formed which is mylonitic in most cases. Shear sense indicators reveal a top–to–N transport. The D_2–structures clearly post–date the Barrovian mineral assemblage (garnet, staurolite, kyanite) of the amphibolite facies parts. During the **Variscan** orogeny folds and thrusts (D_3), strike–slip faults (D_4), and late extensional faults (D_5) originated under lower metamorphic grade as compared with the Cadomian events (see Fig.). D_3–fold axes trend NE–SW to NNE–SSW, and the vergence of D_3–folds and associated thrusts changes markedly from NW (NW–vergence) to SE (SEvergence) suggesting a pop–up–like structure during the Variscan convergence. The latter occurred most likely during the Upper Devonian.

Strike–slip faulting along ENE trending steeply inclined shear planes (D_4) produced greenschist facies mylonites the shear sense of which is in most cases dextral. The strike–slip events clearly predate the intrusion of Variscan granitoids (330 – 320 Ma).

Late Variscan extension (D_5) is indicated by normal faults which frequently display an oblique component of shear. They are ductile and brittle in amphibolite–facies and greenschist–facies parts, respectively. In the Teplá region SE–directed normal faulting was active along steeply E–dipping amphibolite–facies shear planes. In the Domažlice area ENEdirected down–dip movements along N–dipping greenschist–facies shear planes are widespread. Thus, the extensional movements are exclusively directed towards parts with lower metamorphic grade (i.e. the center of the TB) suggest–

ing a close relationship between crustal extension, metamorphic zoning and exhumation of the high-grade metamorphic rocks. Late Variscan extension culminates along the West-Bohemian Shear Zone (WBS), a steeply ENF-dipping ductile normal fault where the TB was downthrown to the E from the adjacent Moldanubian terrane. Several late Variscan granitoids of different composition occur along and were cut by the WBS suggesting that intrusion-related thermal weakening supported strain localization. Cross-cutting relationships of normal faults and granitoids as well as cooling ages of micas suggest that crustal extension mainly occurred between 330 and 310 Ma. During this time the adjacent Moldanubian rocks suffered strong low-pressure metamorphism (320 Ma) which is lacking in the TB. Accordingly, the movements along the WBS produced a strong thermal disequilibrium: "Hot" Moldanubian crust. was juxtaposed against "cold" TB. Consequently, the latter shows prograde reheating at its westernmost border (close to the WBS).

The late Variscan extensional collapse was probably related to convective removal of the deeper parts of the overthickened lithosphere (TBCL) which may also explain the high heat flow and large amounts of S-type granitoids of the Moldanubian terrane. It has to be emphasized that the crustal architecture of the western part of the TB is highly dominated by these collapse structures.

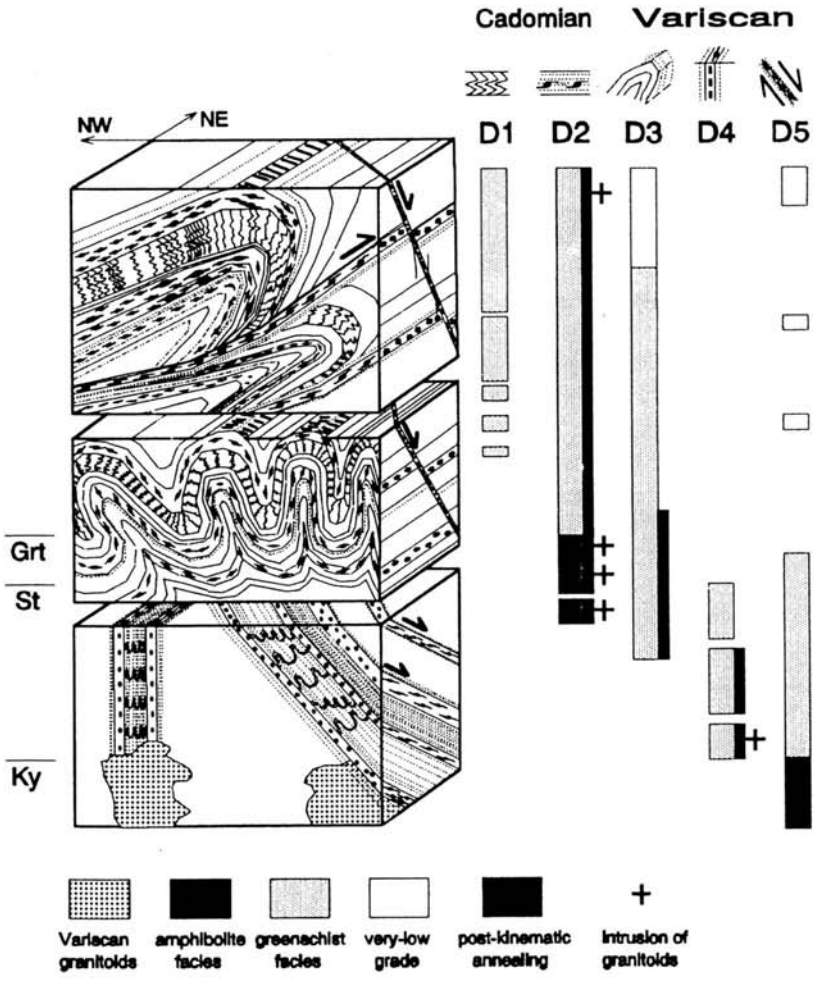

Fig. Schematic presentation of deformation structures and metamorphic conditions within different crustal levels of the SW part of the Teplá-Barrandian (Domažlice area). Grt, St and Ky indicate the metamorphic isograde of Vejnar which probably refer to the early Cadomian cycle. Note that the upper crustal parts are dominated by Cadomian structures whereas Variscan structures prevail in the deeper parts.