Comments on "On the methodology of Engineering Geodesy" by Fritz K. Brunner, J. Appl. Geodesy, Vol 1, pp. 57-62, 2007.

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The paper "On the methodology of Engineering Geodesy" by Fritz Brunner gives a very valuable overview over and classification of the methods used in engineering geodesy. However I miss an important point and disagree on important statements in the paper.

One important feature of the current methodology is missing: Disregard the deflections of the vertical, and preferably also regard the quasi-geoid (or the geoid for those who believe in this animal) as being identical to the reference ellipsoid or a surface parallel to it.

Now, obviously this methodology leads to erroneous results even for networks of limited extend. Methods of integrated geodesy (Krarup, 1980, Hein, 1986, 1987 and many more) must also be applied in modern engineering geodesy, and the student must have courses in physical geodesy. A good example is also the use of inertial surveying in engineering geodesy.

The first methodological item in paragraph 4.1 "Point discretisation of natural surfaces and objects" sounds convincingly correct. But if one today considers the enhanced use of remote sensing images (SAR) data on sees that this methodology is only a part of modern engineering geodesy. It is today possible from space to monitor an engineering structure with results even superior to precise levelling, see e.g. Crosetto et al, 2002.

In the last lines of paragraph 4.7 "Quality control of measurements" is postulated that "gross errors need to be eliminated". This is definitely not a generally accepted methodological principle. Obviously if a suspected gross error is identified, and its reason found (a wrong sign for example) it must be corrected. Even if the error can not be identified it is generally much better to down-weight the observation as used in the successful "Danish Method", see e.g. Krarup et al., 1980.

Fritz Bruner's paper should hopefully be followed by comments similar to mine, since methodology is always up for discussion – and changing – even in engineering geodesy as also stated in the last sentence (Question) of Section 1

References:

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