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Half a Century of the Maintenance of St. Wenceslas Monument on Wenceslas Square

ANNOTATION

Caring for historical monuments is challenging for every administrator. In the case of St. Wenceslas Monument on Wenceslas Square, which is not only a national cultural monument, but also an important state-forming symbol, this is doubly true. Appropriate care, maintenance and restoration method ought to derive from the assessment of all the influences causing destructive processes on the surface and inside the sculpture itself or on the architecture of the granite pedestal. In 2018, after previous comprehensive surveys, Prague City Gallery (GHMP) completed the restoration of the granite pedestal of the monument. Apart from not very frequent earlier maintenance the destruction of the granite surface was also caused by the physical characteristics of the material itself, or by the location of the monument in the middle of a busy street junction. The surveys also resulted in an accurate 3D model of St. Wenceslas Monument enabling future evaluation.

SUMMARY

The Monument of St. Wenceslas on Wenceslas Square is one of the main symbols of the Czech state. The masterpiece of art by sculptor Josef Václav Myslbek and architect Alois Dryák has been proclaimed a national cultural monument. The equestrian sculpture with four patron saints of the Bohemian lands is located on a massive architectural pedestal made of granite blocks. The surface condition of these blocks has long been a concern for the Prague City Gallery (GHMP), which is the administrator of the monument. In 2016, the GHMP decided to launch a comprehensive survey, in order to determine the optimal method for subsequent restoration and future maintenance of the entire monument.

The state of a cultural monument in the external environment is influenced mainly by its surroundings and climatic conditions. Monument of St. Wenceslas still stands in the same place, but the regime and frequency of traffic in the immediate vicinity has transformed, with the changes in tram lines, Museum metro station construction, landscaping, or the extension of the highway in front of the National Museum, which has become the main car transport thrust in Prague for many decades.

Surveys using various disciplines and analysis have suggested that the current degraded surface of the granite blocks of the pedestal derives from a variety of causes, from exhalations, surrounding traffic and associated vibrations, to the natural aging of Dolní Požáry granite, which is susceptible to degradation in several decades.

The restoration survey also included archival research of previous restoration records and historical repairs, cleaning and the preservatives used, which could also have influenced chemical degradation processes.

The restoration process itself, completed in 2018, was mainly conservative in nature, based on the findings. Separated layers of granite were secured and replenished with resin seals where the polished surface had already fallen off, leaving a matte crater. This intervention is not long-term and will have to be renewed after several years together with surface conservation.

A detailed photogrammetric and laser survey of the entire monument, pedestal and bronze statues was pursued as essential documentation of the monument. By combining both methods, a 3D model was created in cooperation with the Czech Technical University, which can be used for future comparative studies and observations of possible movements of architecture and the equestrian sculpture, which could endanger the monument. The 3D model can also be used to educate and popularize the exceptional sculptural work by J. V. Myslbek.

Fig. 1. Prague 2-Vyšehrad, Wenceslas Štulc's Gardens (Štulcovy sady), plot No. 77. A copy of the equestrian statue of St. Wenceslas by Jiří Novák (1922–2010) and Zdeněk Menšík (1925–2001) created in 1959–1960 (Prague City Gallery archive, unknown photographer, ca 2010).

Fig. 2. Prague 1-New Town, Wenceslas Square, plot No. 2306/1 (part), 2306/10. Detail of St. Wenceslas head (private archive of Rudolf Manoušek, unknown photographer, 1966).

Fig. 3. Prague 1-New Town, Wenceslas Square. Corner block under the statue of St. Agnes with visible surface destruction (photo by J. Hanáková, 1977).

Fig. 4. Prague 1-New Town, Wenceslas Square. Corner block under the statue of St. Agnes with visible surface destruction (photo by author, 2018).

Fig. 5. Prague 1-New Town, Wenceslas Square. Photographs from the restoration report documenting the biological pollution of the pedestal (photo by F. Cihlář, 1980).

Fig. 6. Prague 1-New Town, Wenceslas Square. Installation of a decorative chain by employees of Pasířství Houska and Douda (Prague City Gallery archive; unknown photographer, 2013).

Fig. 7. Prague 1-New Town, Wenceslas Square. Cleaning of St. Wenceslas Monument by John & Nosek Co. (Prague City Gallery archive; unknown photographer, 1992).

Fig. 8. Prague 1-New Town, Wenceslas Square. Sampling for petrographic analysis (Prague City Gallery archive; unknown photographer, 2017).

Fig. 9. Prague 1-New Town, Wenceslas Square. Detail of the granite block damaged surface (Prague City Gallery archive; unknown photographer, 2015).

Fig. 10. Prague 1-New Town, Wenceslas Square. Location of spherical signals for laser scanning of St. Wenceslas Monument (Prague City Gallery archive; unknown photographer, 2017).

Fig. 11. St. Wenceslas Monument. Model creation in Agisoft Photoscan software (graphics by K. Pavelka et al., 2017).

Fig. 12. St. Wenceslas Monument. Faro laser scanner, referenced point cloud. Reference triangles are marked in green. The laser model was eventually decimated to 14 million triangles for data manipulation (graphics by K. Pavelka et al., 2017).

Fig. 13. St. Wenceslas Monument. IBMR (image based modelling and rendering) photogrammetric technology complements laser scanning and enables submillimeter survey accuracy of detailed points based on detailed images from a very short distance. In the end, 632 photographs were used (graphics by K. Pavelka et al., 2017).

Fig. 14. Monument of St. Wenceslas. Laser scanning. Separate laser scanning does not provide enough data for detailed processing of a digital model. This is especially evident in the plastic details of the sculpture and its surface (graphics by K. Pavelka et al., 2017).

Fig. 15. Monument of St. Wenceslas. Laser scanning combined with IBMR. Photogrammetric technology won in the accuracy of displaying the details in the model. On the other hand, a photogrammetric model created originally in the local coordinate system and without a scale may be deformed. The resulting high-quality IBMR model was transformed into a scale-accurate model from a laser scanner. Both data sets have different acquisition methods, as well as different problems with model creation (graphics by K. Pavelka et al., 2017).

Fig. 16. Monument of St. Wenceslas. Model converted to virtual reality using Unreal Engine VR software (graphics by K. Pavelka et al., 2017).

Fig. 17. Monument of St. Wenceslas. 3D model the statue of St. Wenceslas in Agisoft Photoscaner software. The 3D model with photographic texture has a total of 32 million points, 7 million triangles. The detail of the model is better than 1 mm. **A** – complete 3D model; **B** – detail of St. Wenceslas (graphics by K. Pavelka et al., 2017).

Fig. 18. Prague 1-New Town, Wenceslas Square. Surface conservation of bronze sculptures, application and polishing of preservative waxes (photo by author, 2018).

Fig. 19. Prague 1-New Town, Wenceslas Square. Shot from a video endoscopic survey of Olympus imaging technology. In the right, the insulation around the supporting H profile in the load bearing leg of the horse can be clearly seen (Prague City Gallery archive; photo by a video endoscope of the company Olympus A. Šumbera, 2017).

Fig. 20. Prague 1-New Town, Wenceslas Square. Detail of the damage to the bronze shell of the horse hind legs. **A** – the hind leg; **B** – the front leg (private archive of Rudolf Manoušek; unknown photographer, 1966).

Fig. 21. Prague 1-New Town, Wenceslas Square. A hole cut in the horse side (private archive of Rudolf Manoušek, unknown photographer, 1966).

Fig. 22. Prague 1-New Town, Wenceslas Square. Shot from a video endoscopic survey. Detail of screws (Prague City Gallery archive; photo by Olympus A. Šumbera video endoscope, 2017).

Fig. 23. Prague 1-New Town, Wenceslas Square. Shot from a video endoscopic survey. A time box is hung on the internal structure, wrapped and sealed in a plastic package (Prague City Gallery archive; photo by Olympus A. Šumbera video endoscope, 2017).

Fig. 24. Prague 1-New Town, Wenceslas Square. Shot from a video endoscopic survey. The box probably contains periodical press, and coins are also recognizable at a different angle on the record (Prague City Gallery archive; photo by Olympus A. Šumbera video endoscope, 2017).

Fig. 25. Prague 1-New Town, Wenceslas Square. Shot from a video endoscopic survey. The brush forgotten by the restorers in 1966 (Prague City Gallery archive; photo by Olympus A. Šumbera video endoscope, 2017).

Fig. 26. Prague 1-New Town, Wenceslas Square. Surface cleaning of the monument with pressurized water from a mobile platform (photo by author, 2018).

Fig. 27. St. Wenceslas statue as the silent witness by Czechoslovak flag upright, when people gathered on the Wenceslas square in Prague on Sep. 28, 1918, the day of declaring Czechoslovak independence from the Austro-Hungarian Empire (Archive of the National Museum, collection of the Castle Photoarchive, photo Rudolf Bruner Dvořák, 1918).

Translation by Linda Foster