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GRAPHIC RESULTS OF THE KARLSPLATZ PROJECT

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Summary

The graphic results from the photogrammetric restitution of the pavilion built by Otto Wagner for the Karlsplatz metro station in Vienna are presented. The use of bundle adjustment was experimented in order to reduce the number of control points initially measured. Plotting was carried out in AutoCad to obtain both elevations and perspectives.

The project developed by CIPA working group to prove the effectiveness and precision of different types of photogrammetry measurement and especially of different programs of bundle adjustment, chose as test element the small pavilion built by the architect Otto Wagner as an access to the Karlsplatz metro station in Vienna. It is a free-standing, metallic construction, and is a magnificent example of the "Viennese secession" architecture within the modernist movement.

This small building possesses ideal conditions for the aims of this project. The size is adequate, not excessively large, with plenty of reference points which are clear and easy to identify for measuring; it is free-standing and practically free of obstacles for photography, and at the same time sufficiently well-known at a worldwide level.

Several series of photographs taken around the pavilion with different cameras and lenses have served to prove different programs and even to compare results with the same program used by varying laboratories, and using different measuring instruments.

In the School of Arabic Studies (CSIC) in Granada we have used the ORIENT program from the Institut of Photogrammetry and Remote Sensing of the Technical University Vienna. As measuring device we have used an Adam MPS2 stereoplottor operate as a monocomparator. We operated with two series of photographs, one taken with a semimetric Rolleimetric 6006 camera, 55 x 55 format, and the other series of photographs taken with a camera of 35 mm without previous calibration. In both cases we experimented with a considerable number of control points, and with a minimum number of these were able to reduce the control points to only 4 for the whole block. The results of the corresponding bundle adjustments have been evaluated together with the rest of the studies from other laboratories or institutes, by Dr. F. Patiss.

Although the main objective of this project was to evaluate the...
different programs of bundle adjustments available, as well as
to compare results between different users of one same program
it should not be forgotten that the fundamental application of
photogrammetry in the field of architecture continues to be that
of obtaining graphic records. We therefore considered that it was
useful to extend the experiment to the field of architectural
representation. Up until the present, only in our institute have
we carried out a graphic plotting of the building presented here.
As a comparative element we have at our disposal a plotting
previously carried out by the Bundesdenkmalaamt using a SMK metric
bi-camera from Carl Zeiss Oberkochen and an analogical plotter.
In our case we have used the photographs obtained with the
Rollemetric 6006 camera and the ADAM MPS2 stereoplotter.

For this instrument we have an interface for working directly in
Autocad. In this way, plotting is carried out as if it were CAD
drawings in three dimensions, and the plotting maintains its
three-dimensional measuring quality. As records of reference,
three of the four elevations have been plotted, since the two
lateral elevations are practically identical. From these three-
dimensional plottings of the elevations, and selecting the
defining lines of a horizontal contour/outline, it has been
possible to draw the horizontal section (ground plan) of the
outside contour/outline of the building. Besides this, by joining
the elevations we were able to make up a three-dimensional model
with which to construct perspectives of the building from
different positions and angles.

By comparing the results of the analogical plotting carried out
by the Bundesdenkmalaamt with the drawings now effected, a
similarity may be appreciated both with regard to the precision
achieved and with regard to the graphic result. The most
remarkable difference can obviously be observed in the lighter
weight and greater ease in the use of the equipment used at
present, particularly with reference to the photographic camera,
and above all, the considerable advantages there are on the
availability of the results in CAD and with three dimensions.
This whole system provides undeniable advantages, from the
simplification of data-taking thanks to the use of light cameras
which are easy to transport and to handle, to the reduction in
control points to a number previously unheard of. In addition to
this we should mention the convenience of plotting in CAD and the
innumerable advantages and possibilities which this offers for
the later use of plotting. At the same time there are
possibilities of obtaining a graphic quality similar to that
achieved by means of traditional equipment, whether analogical
or analytical, of high precision. If we take into account the
much lower costs of this equipment, and the advantages provided
by the available software programs, it is evident that
terrestrial - and more particularly architectural photogrammetry
- offer a very promising future.

ILLUSTRATIONS
Fig. 1. Ground plans of the Karlsplatz Pavillon with sket-
of the photographs with 55x55 and 35mm camera.
Fig. 2. Main elevation of the Pavillon by Otto Wagner.
Fig. 3. Lateral elevation of the Pavillon.
Fig. 4. Rear elevation of the Pavillon.
Fig. 5. Perspective of the Pavillon by Otto Wagner in the
Karlsplatz.
KARLSPLATZ. VIENNA. OTTO WAGNER PAVILION.

PLOTTED BY ESCUELA DE ESTUDIOS ARBALES. C.S.C. GRANADA. SPAIN.