

# The Origin of the Term Photogrammetry<sup>1</sup>

**ALBRECHT GRIMM, Kreuztal**

## ABSTRACT

The term photogrammetry was formed by the German geographer Otto KERSTEN in connection with the German civil-engineer Albrecht MEYDENBAUER. It was firstly introduced in 1867 as title of an article from MEYDENBAUER which was published in the Wochenblatt des Architektenvereins zu Berlin (Berlin Architectural Society - Weekly Journal).

## SOMMAIRE

Il est montré que le mot photogrammétrie est formé par l'géographe allemande Otto KERSTEN en commun avec l'ingénieur civile allemande Albrecht MEYDENBAUER et est appliqué premièrement par MEYDENBAUER en 1867 dans le Wochenblatt des Architektenvereins zu Berlin (feuille de la société des architects de Berlin) comme titre d'une publication.

## ZUSAMMENFASSUNG

Es wird gezeigt, daß der Begriff Photogrammetrie von dem deutschen Geographen Otto KERSTEN gemeinsam mit dem deutschen Bauingenieur Albrecht MEYDEN-BAUER geprägt und erstmals 1867 im Wochenblatt des Architektenvereins zu Berlin als Titel einer Veröffentlichung von MEYDENBAUER verwendet worden ist.

## 1. DIFFERENT STATEMENTS

Most textbooks on photogrammetry address very little on the historic development of this discipline. Where information is given, it is incomplete or contradictory.

Some 170 years ago photographers and engineers began discussions on the question of how to use photographic images for surveying. These efforts can be summarised as

Planchette Photographique (CHEVALLIER),  
Ikonometrie / Metrophotographie (LAUSSEDAT),  
Photometrographie / Photogrammetrie / Messbildkunst (MEYDENBAUER),  
Photographometrie (PORRO) and  
Photographische Goniometrie / Phototopographie (PUJO & FOURCADE).

By end of this year, it will be 140 years ago that the term photogrammetry was firstly used. The authorship on the term photogrammetry has been given by SCHWIDEFSKY / ACKERMANN [17, p. 11] to several writers<sup>2</sup>, by the American Society of Photogrammetry [2, p. 4] to MEYDENBAUER - but with a wrong date<sup>3</sup> - and correctly by CARBONELL [3, p. 38] given to

---

<sup>1</sup> Revised and completed article earlier published under the title "Der Ursprung des Wortes PHOTOGRAMMETRIE" {The Origin of the Term PHOTOGRAMMETRY} at the 1980 Hamburg ISPRS-Congress [8].

<sup>2</sup> W. JORDAN, A. MEYDENBAUER and F. STOLZE.

<sup>3</sup> "In Germany, Dr. A. Meydenbauer was the first to give his attention to the new method of photographic surveying. He published a paper on this subject in 1893 in which the first use of the word *photogrammetry* appears."

Albrecht MEYDENBAUER<sup>4</sup>. CARBONELL's statement that MEYDENBAUER had first started his investigations on photogrammetry in 1867, is not correct. Even publications by the International Society of Photogrammetry and Remote Sensing do not make correct statements on authorship and first use [4, 5].

## 2. FORMING THE TERM PHOTOGRAMMETRY

Since 1858 MEYDENBAUER was busy with photogrammetric methods<sup>5</sup>, trying to interest his colleagues from architectural and civil-engineering<sup>6</sup> for this safe and efficient survey of “historic valuable basic fabric”, today known as preservation of monuments and historic buildings. Later on he added topography as well, thinking on operating larger civil engineering (railway construction) [10] and military projects (terrain and fortifications) [14].

On searching for additional applications for his new survey method, MEYDENBAUER tried to introduce photogrammetry on expeditions. For that reason he contacted the German geographer Dr. Otto KERSTEN<sup>7</sup>, who in 1862 had accompanied the explorer Baron K.K. VON DER DECKEN on climbing Africa's highest mountain first, the Kilimanjaro. KERSTEN made the proposal to change the unfortunate wording of *photographometrie* into *photogrammetry* [13, p. 10]. The new term photogrammetry has firstly been used in December 1867 as the title of an unsigned article (fig. 2).

The authorship on this article has clearly been given in 1892 to MEYDENBAUER by the editor of the *Deutsche Bauzeitung*, earlier known as *Wochenblatt des Architektenvereins zu Berlin* - Berlin Architectural Society, Weekly Journal - (fig. 3).

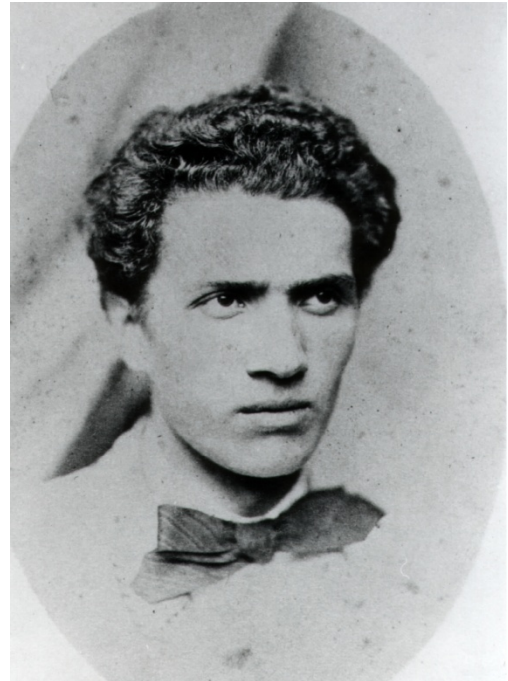


Fig. 1: The royal Bauführer <sup>6</sup>

<sup>4</sup> „It is also a fact that the term photogrammetry was introduced by an architect, Albrecht Meydenbauer, who made first photogrammetric surveys in 1867.“

<sup>5</sup> In this context, MEYDENBAUER's memories [6, p. 15], his manual on photogrammetry [13, p. 7 & 9 and annex II] as well as a note by the Photographic Messages {Photographsche Mitteilungen, Berlin (1865)15, p. 36} may be referred, where MEYDENBAUER's method on applying photography with civil engineering and surveying has been reported.

<sup>6</sup> The ranking in the prussian administration for civil-engineers was “Bauführer, Baumeister, Bauinspektor, Ober-Bauinspektor, Baurath and Regierungs- und Baurath”. In the pre-industrial area, the “Baumeister” was at the same time an architect, civil-engineer, landscape planner, town planner and surveying engineer.

<sup>7</sup> KERSTEN, O. (1871): Baron Carl Claus von der Decken's Reisen in Ost-Afrika in den Jahren 1859 bis 1865. Hrsg. im Auftrage der Mutter des Reisenden Fürstin Adelheid von Pless. Erzählender Theil. Zweiter Band: Baron Carl Claus von der Decken's Reisen in Ost-Afrika in den Jahren 1862 bis 1865. Nebst Darstellung von R[ichard] Brenners und Th[eodor] Kinzelbach's Reisen zur Feststellung des Schicksals der Verschollenen, 1866 und 1867. Bearbeitet von Otto Kersten. Leipzig und Heidelberg.





### 3. CLAIMS ON AUTHORSHIP BY WILHELM JORDAN<sup>8</sup>

It seems to be that the champion of photogrammetry in Germany, the civil-engineer Albrecht MEYDENBAUER was never given the acknowledgment by his German survey colleagues he had been hoping for, and which he should have been entitled. This can clearly be seen on the claims on authorship on the term photogrammetry by Prof. JORDAN.

In July of 1874 the journal *Deutsche Bauzeitung*<sup>9</sup> reported on a statement given by JORDAN during a meeting of the Karlsruhe Natural Science Society, where he addressed his topographic surveys in the Libyan desert as member of ROHLF's expedition<sup>10</sup>. The *Deutsche Bauzeitung* made the remark, it would have been most desirable, if under this extraordinary case a trial with photogrammetry would have been executed, on whose value and importance different opinions actually exist. Answering, JORDAN has given a letter to the *Deutsche Bauzeitung*, dated 16.08.1874, where he gave some statement to the journal's report and informed on some surveying details<sup>11</sup>.

As a reviewer on the textbook on photogrammetry by SCHIFFNER [16] in the *Zeitschrift für Vermessungswesen* (ZfV)<sup>12</sup> JORDAN asserts by a footnote that the appearance of the term photogrammetry can be traced back on his article on the photogrammetric survey of the oasis Dachel [11]. These claims have been rejected in the summer of the same year by the editors of the *Deutsche Bauzeitung*. The editors stated (fig. 3) that by end of 1867 an article of MEYDENBAUER, with the title "Die Photogrammetrie" (fig. 2), had been published.

There can be no doubt that the term photogrammetry was known by Prof. JORDAN since the summer 1874 at the latest. Nevertheless it has been addressed in JORDAN's Manual of Surveying, published 1908, [12, footnote, p. 830] that *the term photogrammetry has firstly been printed by us in the Journal of Surveying (ZfV) 1876, p. 16 as a linguistic enhancement of the term used elsewhere of "photometrography". It seems to be that during these days the better term "photogrammetry" has been introduced independently from two different parties.*

The other party - MEYDENBAUER - introduced the term nearly 10 years earlier!

### 4. MEYDENBAUER AND HIS GERMAN SURVEYOR COLLEGES

It seems to be that there was not a positive attitude by the German surveying engineers and photogrammetrists to the civil engineer MEYDENBAUER.

Two examples may be given.

During the summer of 1867 demonstrations have been made by MEYDENBAUER for using photography for the survey of terrain and architectural objects. This demonstration has been sponsored by the Prussian Ministries of Commerce and Defense and have been executed under the observation of an engineer-officer (his name is known today; it was Lieutenant Buchardi). The area to be surveyed was the city and vicinity of Freyburg/Unstrut, one of the most northern areas in Germany for growing wine.

<sup>8</sup> JORDAN, Wilhelm, Professor at Karlsruhe and Hanover, founder of the *Manual of Surveying*; s. HELMERT, F.R. (1899): Wilhelm Jordan +, ZfV 28(1899)11, p. 321-328.

<sup>9</sup> Deutsche Bauzeitung 8(1874) 60, p. 495.

<sup>10</sup> ZfV 3(1874) p. 90-99 and p. 349-385.

<sup>11</sup> Deutsche Bauzeitung 8(1874)67, p. 272.

<sup>12</sup> ZfV 21(1892)7, p. 219-221.

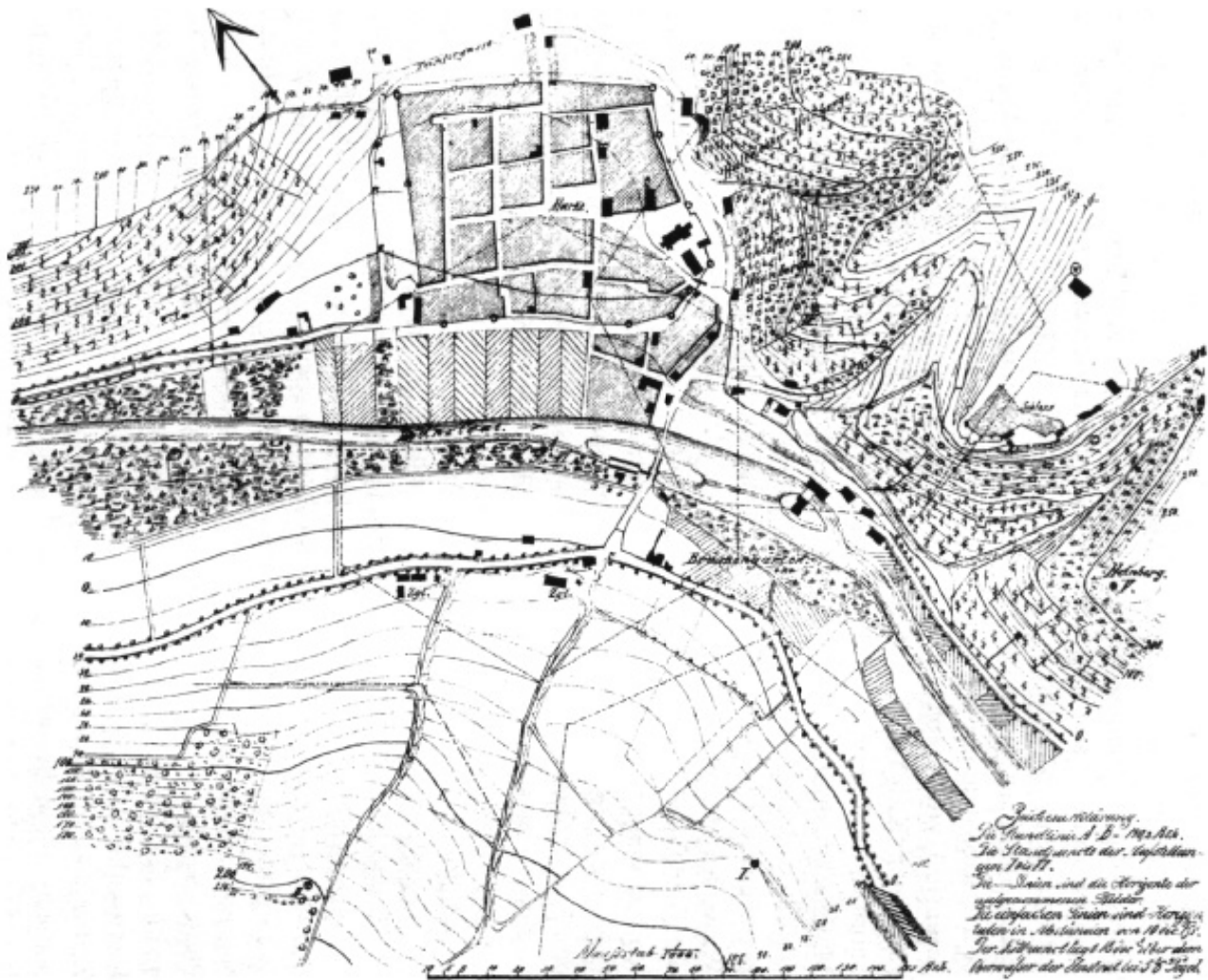


Fig. 4: Map of Freyburg/Unstrut from 1867 constructed by means of terrestrial photogrammetry

Within two days, 21 images were taken of the terrain and on another 1.5 days nine images of the city-church of Freyburg were made (description s. fig. 2, map s. fig. 4). All office work was executed in Berlin by a person, who had never seen the terrain of Freyburg before, naturally under supervision of the military and the help of MEYDENBAUER.

The result of this 1867 demonstration was extraordinary and has been published, together with the map produced (fig. 4), in the Archive for Officers of the Royal Prussian Artillery and Engineering Corps [14] in 1868.

In 1903, more than 30 years later, Bruno SCHULZE, Major-General and chief of Prussian Topographic Survey published his lectures, given at the Royal Military Academy [18]. He remarked that *it cannot be assumed that, at that time (1867), it might have been possible to create a map - as shown - by photogrammetric means, without the help of other auxiliary material*<sup>13</sup>.

Was this an excuse of the Topographic Survey for not being active in the field of photogrammetry for more than 30 years?

<sup>13</sup> "..., es ist jedoch nicht anzunehmen, dass es damals (1867) hätte gelingen koennen, diese Karte so, wie sie hier vorliegt, ohne Benutzung anderer Hilfsmittel allein auf photogrammetrischem Wege herzustellen."

Another example:

The book of SANDER and MANEK, addressing all PhD papers and professional dissertations [15] on photogrammetry of the German-speaking part, Albrecht MEYDENBAUER can not be found, even he received two-times a *PhD honoris causa* because of his merits for the development of photogrammetry (Marburg 1885<sup>14</sup> and Hannover 1908 [9]).

## 5. USE OF THE TERM PHOTOGRAMMETRY BY MEYDENBAUER

The term Photogrammetry has been used between 1867 and 1876 for information, regarding MEYDENBAUER's work. For example the survey of the Marienburg by means of Photogrammetry<sup>15</sup>, a publication on the photographic camera as a measuring instrument<sup>16</sup>, a report on a new progress in photography<sup>17</sup>, a report on a lecture given by MEYDENBAUER titled the newest experiences in the field of photogrammetry<sup>18</sup>, an essay on the research and the preservation of the national monuments with the hint that the modern, unfortunately under-used method of photogrammetry must find a more widely spread and thankful application<sup>19</sup>, as well as a report on MEYDENBAUER's activity for the mapping of terrain during the construction of the Gotthard railway<sup>20</sup>, and a statement on the matter of dispute regarding an anomaly of the tower of the Freiburg/Br. cathedral, where MEYDENBAUER proposes to come to a decision, based on exact drawings generated by photogrammetry<sup>21</sup>.



Fig. 5: Privy Councillor (Geheimer Baurat) Prof. Dr.phil. h.c. Dr.-Ing. e.h. Albrecht MEYDENBAUER, director of the Royal Prussian Photogrammetric Institut, Berlin

<sup>14</sup> The original document of the Philipps-University of Marburg is dated 22. Juli 1885 and given in latin. A translation can be as follows: *...especially for the invention of the photogrammetry and their development to a type of science and for the development of practical use for art experts developed an easy way for the exploration of monuments and given the necessary method ...*

<sup>15</sup> "Aufnahme der Marienburg mit Hülfe der Photogrammetrie {Survey of Marienburg / West-Prussia by means of Photogrammetry}"; Deutsche Bauzeitung 3(1869)31, p. 375.

<sup>16</sup> MEYDENBAUER, A.: Die photographische Camera als Messinstrument {The photographic Camera as a Survey-instrument}; Deutsche Bauzeitung 3(1869)32, p. 381-383 and 33, p. 395-398.

<sup>17</sup> Deutsche Bauzeitung 3(1869)46, p. 564.

<sup>18</sup> "Die neusten Erfahrungen auf dem Gebiete der Photogrammetrie {Newest Experiences in the Field of Photogrammetry}"; Zeitschrift für Bauwesen 20(1870)4-6, col. 257-262.

<sup>19</sup> FRITSCH, K.E.O.: Das deutsche Reich und die Sorge für die Erforschung und Erhaltung der vaterländischen Baudenkmale; Deutsche Bauzeitung 7(1873)54, p. 203-204 and 56, p. 211-212.

<sup>20</sup> TSCHUDI, V.: Zur Photogrammetrie; Deutsche Bauzeitung 7(1873)68, p. 265.

<sup>21</sup> MEYDENBAUER, A.: Zur Schwellung der gotische Turmhelme des Freiburger Münsters; Deutsche Bauzeitung 10(1876)104, p. 529.

## 6. RESULT

It can be assured that KERSTEN and MEYDENBAUER have created the term photogrammetry and that MEYDENBAUER firstly published this term in December 1867 under the title “Die Photogrammetrie” and anonymous authorship. This article addressed photogrammetry as a remarkable and ancillary science for civil engineers with a promising future.

## 7. REFERENCES

- [1] ALBERTZ, J. (2001): Albrecht Meydenbauer – Pioneer of Photogrammetric Documentation of the Cultural Heritage; Proceedings 18<sup>th</sup> International Symposium CIPA 2001, Potsdam (Germany).
- [2] AMERICAN SOCIETY OF PHOTOGRAMMETRY (1966): Manual of Photogrammetry; 3rd Edition, Vol. I, Falls Church; Va.
- [3] AMERICAN SOCIETY OF PHOTOGRAMMETRY (1979): Handbook of Non-Topographic Photogrammetry; Falls Church, Va.
- [4] BLACHUT, T.J. & R. BURKHARDT (1988): Historical Development of Photogrammetric Methods and Instruments; American Society for Photogrammetry and Remote Sensing, Falls Church, Va.
- [5] BLACHUT, T.J. (1988): Geschichte der Photogrammetrie {History of Photogrammetry}, Bd. 1 – Die Frühzeit der Photogrammetrie (bis zur Erfindung des Flugzeuges); IfaG, Frankfurt/M.
- [6] GRIMM, A. (1977): 120 Jahre Photogrammetrie in Deutschland {120 Years of Photogrammetry in Germany}; Deutsches Museum, Abhandlungen und Berichte 45(1977)2: 1-57, R. Oldenbourg, München & VDI-Verlag, Düsseldorf.
- [7] GRIMM, A. (1978): Zwei Meydenbauer'sche Instrumente für die Architektur-Photogrammetrie wiedergefunden {Two Meydenbauer Instruments for Architectural Photogrammetry Recovered}; Bildmessung und Luftbildwesen 46(1978)1, 33-34.
- [8] GRIMM, A. (1980): Der Ursprung des Wortes Photogrammetrie {The Origin of the Term Photogrammetry}; ISPRS Kongress, Hamburg, Komm. VI/2, Bd. XXIII, Nr. B10, 323-330.
- [9] GRIMM, A. (1981): Albrecht Meydenbauer 1834 - 1921, in KAFKA, K. (Hrsg.): Universität (TH) Hannover, Ehrendoktoren Architektur 1831 - 1981 {Architectural Honorary Doctors of Hanover University 1831 - 1981}; Hannover.
- [10] HEUSINGER VON WALDEGG, E. (Hrsg.) (1880): Handbuch der Ingenieurwissenschaften in vier Bänden, Band I: Vorarbeiten, Erd-, Straßen-, Grund- und Tunnelbau sowie Konstruktion der Stütz- und Futtermauern. Hier: 74-83, Aufnahme des Terrains und Zeichnen der Pläne mit Hilfe der Photogrammetrie {Survey of the Terrain and Construction of Plans by Means of Photogrammetry}; Leipzig.

- [11] JORDAN, W. (1876): Über die Verwertung der Photographie zu geometrischen Aufnahmen, Photogrammetrie (mit einer photogrammetrischen Aufnahme der Oasenstadt Gassr-Dachel in der Libyschen Wüste) {On the Use of Photography for Geometric Survey, Photogrammetry (with a photogrammetric survey of the oasis Gassr-Dachel in the Libyan desert)}; Zeitschrift für Vermessungswesen 5(1876)1:1-17.
- [12] JORDAN, W. (Hrsg.) (1908): Handbuch der Vermessungskunde {Manual of Surveying}; 7. Aufl., 2. Bd., Stuttgart.
- [13] MEYDENBAUER, A. (1912): Handbuch der Messbildkunst {Manual of Photogrammetry}; Halle/Saale.
- [14] N.N. (1868): Über die Verwendbarkeit der Photographie für Terrain- und Architektur-Aufnahmen (Hierzu Tafel II) {On the Usability of Photography for Terrain- and Architectural-Surveys (with table II)}; Archiv für die Offiziere der Königlich Preussischen Artillerie- und Ingenieur-Korps 32(1868) Bd.63:189-210.
- [15] SANDER, W. & F. MANEK (1963): Deutschsprachige Dissertationen und Habilitationen über Bildmessung {German-speaking Dissertations and Professional Dissertations on Photogrammetry}; Dresden.
- [16] SCHIFFNER, F. (1892): Die photographische Messkunst oder Photogrammetrie, Bildmesskunst, Phototopographie; Halle/Saale 1892.
- [17] SCHWIDEFSKY, K. & F. ACKERMANN (1976): Photogrammetrie; 7. Aufl., Stuttgart.
- [18] SCHULZE, B. (1903): Das militärische Aufnehmen {Military Survey}; B.G. Teubner, Leipzig und Berlin.