100 years

Centenary Celebration
July 4, 2010
Vienna University of Technology
Presentation
by Gottfried Konecny,
Leibniz University Hannover
I would like to acknowledge the inspiration received from Jörg Albertz on how to prepare a 100 year celebration presentation, which he did last year in Jena for DGPF.

I also gratefully acknowledge the use of some of his slides.
Fundamentals of Photogrammetry

The Perspective

Leonardo da Vinci 1452-1519
Adoration of the Magi 1481

Albrecht Dürer
Instructions on the use of the Perspective 1525
Fundamentals of Photogrammetry

Photography

Joseph Nicephore Niepce 1765-1833
invention of photography 1822

Louis Daguerre 1787-1851
practical use 1839

Kodak Film by George Eastman 1884
Additive Colour Imagery Adolf Miethe 1906
Fundamentals of Photogrammetry

Optics

Ignazio Porro,
Torino 1801-1875

Ernst Abbe,
Jena 1840-1905/1866
Iconometry
the use of photographs for the survey of objects

Photogrammetry
Terrestrial Mapping Applications

Sebastian Finsterwalder, Vernagt Glacier 1889

Von Orel Stereoautograph 1907/1911

Plane Table Photogrammetry

Stereo Photogrammetry

Glaciers

Mountain Areas
Fundamentals of Photogrammetry

Aerial Platforms

Jacques Etiene & Joseph Michel Montgolfier 1783
Gaspard-Felix Tournachon (Nadar) balloon photography 1863

Rockets 1906
Zeppelin 1909
Aircraft 1914
Koroljov

Wernher von Braun

Space Platforms

Sputnik 1957

Man on the Moon 1969
Remote Sensing Theory

Max Planck
1858-1947

1892 Professor University of Berlin
1900 Theory of Thermal Radiation and Quantum Theory
1918 Nobel Prize for Physics
1929 Max-Planck Medal was instituted and awarded to Max Planck and Albert Einstein
1945 Evacuation to Göttingen from Berlin
Remote Sensing Theory
Nobel Prize for Physics

5th Solvay Conference 1927
first row, 2nd from left Max Planck. 3rd Marie Curie, 5th Albert Einstein;
third row, 3rd from right Werner Heisenberg, 6th Erwin Schrödinger;
Remote Sensing Applications

Robert N. Colwell, Forestry Professor, University of California at Berkeley 1963

As Chairman of the American Society of Photogrammetry Committee of Photo Interpretation he brought out a fundamental publication on „Basic Matter and Energy Relationships in Remote Reconnaissance“ (Phot.Eng.1963 pp.761-799)

the term „Remote Sensing“ was introduced by Ms. Evelyn Pruitt of the U.S. Office of Naval Research in the 1950`s
Landsat in 1972 started the internationalization of Remote Sensing as a resource and environmental monitoring tool for the next 40 years.
Analog Photogrammetry

Max Gasser 1915
Reinhard Hugershoff 1921
Walter Bauersfeld 1923
Heinrich Wild 1925

Stereoautograph
Aerocartograph
Stereoplanigraph

Gasser Projector

„Those Wild Machines“, British King George VI enquired

Ermengildo Santoni, 1921
Georges Poivilliers 1922
Umberto Nistri 1925
E.H. Thompson 1950
In 1960 Prof. Schermerhorn wrote for the 50th Anniversary of the German Society a 50 year review of the developments of Photogrammetry:

„In Europe we see between 1921 and 1927 the development of many precision plotters, (quoting Wild, Nistri, Santoni, Poivilliers, Predhumeau and Ferber).

As far as I find, none of these designers were survey specialists. They either came to photogrammetry from aviation or as engineers and physicists“
Schermerhorn’s English Abstract 1960

“The future role of (European) photogrammetry will depend on whether the great designers and pioneers of photogrammetry, personalities such as Geheimrat Finsterwalder, Hugershoff, Bauersfeld, Von Gruber, Santoni, Nistri, Poivilliers, will find successors.”

Obviously, they have, with other technologies
Analytical Photogrammetry

Sebastian Finsterwalder, Munich solved the spatial orientation of two overlapping balloon images over Gars am Inn in 1899. He made a point by point intersection of terrain points and constructed a map. The period between imagery and the finished map was 3 years.

Earl Church, Syracuse N.Y. developed computational schemes for Space Resection and Space Intersection in 1934.
It needed the invention of the digital computer so that analytical methods could become operational.

Konrad Zuse developed such a computer in 1942 in Germany, as Aiken did in the USA in 1944. The progress in analytical applications of photogrammetry was directly related to the availability of powerful computers.

This has applied until the present day in digital photogrammetry.
Karl Rinner 1957

This is why Rinner preferred theoretical work including a projective solution

Helmut Schmid 1954  
Least Squares Solution Approach

the big bundle adjustment programs originated first in the US government, where large computers were freely available

IBM even launched Digital photogrammetry

Duane Brown  
Statistical

John Sharp, IBM 1964
Exponential Growth in Processor Capacity
Exponential Growth of CPU Capacity
Exponential Growth in Network Performance

**Network exponentials**

- **Network vs. computer performance**
  - computer speed doubles every 18 months
  - network speed doubles every 9 months
  - difference: order of magnitude per 5 years
- **1986 to 2000**
  - computers: x 500
  - networks: x 340,000; factor 1000
- **2001 to 2010**
  - computers: x 60
  - networks: x 4000; factor: 100

*Moore's Law vs. storage improvements vs. optical improvements*, Graph from *Scientific American* 2001) by Cleo Vilett, source Vined Khoslan, Kleiner, Caufield and Perkins
Based on a foundation of continuous progress in developments of computers, the tools for photogrammetry of the future are ready and they will continuously be improved.

There should therefore be no danger of extinction of photogrammetry and remote sensing, if we develop improved models and use the technology appropriately.

Eduard Dolezal, the Founder of ISPRS, had this attitude from the start, and he passed it on to us.
Eduard Dolezal’s Origins

Habsburg Monarchy of the Austro-Hungarian Empire
Budwitz
Emperor Franz Joseph I
in the Empire only 20% of the population spoke German as their mother language and only 20% spoke Hungarian as their mother language.

His father Franz was Czech born and his mother Eleonore was German born

Birthplace: Mährisch Budwitz
(Moravské Budejovice)
born in 1862 he went to German school in Mährisch Budwitz from 1868 to 1876
Dolezal’s Career

High School Graduation in Vienna in 1884

Professor at Technical Academy in Sarajevo in 1993

Professor at Mining University in Leoben in 1899

Professor at Technical University in Vienna in 1905

Meeting with Koppe, Jordan and Sebastian Finsterwalder during his travels to Germany (Braunschweig) 1897
Anton Schell
Predecessor and
Teacher TU Vienna
+1909

Theodor Scheimpflug
visionary student and
colleague
+1911

R.J. Thiele, Moscow
+1911

Eduard Dolezal
Rector TU Vienna
1908-09

Eduard Dolezal
and his contem- poraries

Gustav Kammerer
collaborator of
Scheimpflug, +1914

Karl Fuchs
Pressburg (Bratislava)
+1916

Pio Paganini
Florence
+1916
World War I was initiated by 3 cousins, The descendants of Queen Victoria in London: Wilhelm II of Germany Edward VII of England and Nicolas II of Russia

Wilhelm II of Germany needed Franz Joseph I of Austria as ally

The multinational approach of the Austro-Hungarian Monarchy gave way to nationalism

Ultimately World War I destroyed 4 Empires:
- the German
- the Austro-Hungarian
- the Russian
- the Ottoman
The Austrian Society
Eduard Dolezal
1862-1955
5.3.1907 Foundation of a Society, which after the creation of as German Section on 7.10.1909 in Jena became the Austrian Society

The German Society
„Founding Members of German Section“ on 7.10.1909 in Jena with C.Pulfrich and M.Gasser

The Zeiss Photogrammetric Week October 1909 in Jena
WineHouse „Göhre“

Place of creation
4.7.1910 Foundation of the International Society for Photogrammetry

Dolezal was President from 1910-1926

1st ISP Congress in Vienna 1913

Eduard Dolezal and Baron Hübl were able to give papers in the Parliament
In 1922 in Jena first contacts between Dolezal and the German Society were made for planning the next Congress, which was originally supposed to have taken place in 1917.

In 1925 the decision was made to host the 2nd Congress in Berlin.
The 2nd Congress 1926 in Berlin

The Congress was held at the Technical University in Berlin-Charlottenburg with Prof. Otto Eggert as host and President 1926-1930. Dolezal became Honorary President.

during the Congress Exhibit Carl Pulfrich of Carl Zeiss showed his Planigraph
Max Gasser invented the Gasser Projector (Multiplex) in 1915, for which he obtained a war patent.

1925 the Zeiss Company made the Stereoplanigraph

Gasser made a restitution of two stereo images taken from the Zeppelin over Kalkberge.

He published a book and dedicated it to those

„University Geodesists, who by recommendation of others, for oppression of others, for company interests, free from research motivation, live from salaries of the Government“
Albert Einstein, a Patent specialist from Bern, Switzerland was asked in 1923 for a judgement on Gasser’s patent.

He certified, that Gasser was the first to orient two overlapping images relatively and absolutely and to use them thereafter for spatial reconstruction.

He considered Gasser’s work a Pioneer Patent.

When Gasser addressed a letter to him in 1948, after he apparently had had no success with the authorities,

Einstein answered, quoting the German Poet Schiller:
„Justice is a myth, which only exists in the drama, and this is so all over the world, as self interest takes priority“
3rd Congress 1930 in Zürich

Fridolin Baeschlin
Geodey Professor
ETH Zürich

Heintich Wild, who left Zeiss in Jena in 1923 supported the Congress with his new company Wild-Heerbrugg
4th ISP Congress 1934 in Paris

Louis Hurault
G. Perrier (President)
1930-1934

5th ISP Congress 1938 in Rome

Gino Cassinis
Professor
Politecnico di Milano
President
1934-1938

Georges Poivilliers
instrument designer

Umberto Nistri
instrument designer

the Rome Congress took place at the time
of the Munich treaty over Czechoslovakia with
many participants leaving early
World War II became a prime application for mapping. Areas, which have never been adequately mapped before were rapidly covered. Already mapped areas obtained recent multiple coverages with all war parties involved.

After World War II Germany had no aviation rights.

Dunkirk after air attack

General Dwight D. Eisenhower doing some military aerial reconnaissance
Otto Von Gruber and Willem Schermerhorn

Secret Police (GESTAPO) in a note on Otto Von Gruber: „Von Gruber is to be warned that he will have to be sent to a Concentration Camp, if he does not give up his passive resistance to following orders“ (AZ II A-B No. 2324/29)

Willem Schermerhorn was his colleague and friend. Schermerhorn was sent to a Concentration Camp in 1944. After being dismissed, he joined the Dutch Resistance. In 1945 he became the first Post War Prime Minister of the Netherlands
6th ISP Congress 1948 in Scheveningen, Netherlands

Willem Schermerhorn
Professor, Technical University Delft
President ISP 1938-1948

He organized the Congress following a delay of 6 years due to World War II

At that time Germany could not officially participate

but E.O. Messter of Munich, son of Oskar Messter, the inventor of the aerial survey camera of 1915 was able to represent German photogrammetrists due to his Liechtenstein citizenship.
The Congress took place at the Shoreham Hotel with ISP President 1948-1952 O.S. Reading (first row, white suit)

Germany was readmitted into ISP (head of delegation was Richard Finsterwalder, the President of the German Society first to the left, beside him front row is Bertil Hallert, Sweden,)
8th ISP Congress 1956 in Stockholm

President 1952-1956: P. Mogensen
Secretary General: P.O. Fagerholm
Professor of KTH, Bertil Hallert

9th ISP Congress 1960 in London

President 1956-1960: General R.Ll.Brown
Brigadier Prof. E.H.Thompson
Martin Hotine Univ. College London
10th ISP Congress 1964 in Lisbon

The British Society for Photogrammetry donated a Chain of Office to ISP

President Paes Clemente (1960-1964) was the first to wear the Chain of Office

11th ISP Congress 1968 in Lausanne

Professor Bachmann, the host at EPFL opened the exhibit with President Härry (1964-1968) (4th from left) and President Solaini (1968-1972) (3rd from left) attending
12th ISP Congress 1972 in Ottawa

Congress Director and President (1972-1976) Sam Gamble opened the Congress

the National Exhibit

the first Landsat images (W. Fischer) Buffalo Barbeque in Gatineau
13th ISP Congress 1976 in Helsinki

Finland donated the first ISP Flag to the Society. The designated Congress Director Halonen died before the Congress, thus the organizational task had to be shared.

Prof. Halonen  General Löfström  Prof. Einari Kilpelä

Open Air Festival (Aino Savolainen) in Seurasaari; Congress Hall Techn. Univ.
14th ISPRS Congress 1980 in Hamburg

1980 Congr. Director Konecny; President Jean Cruzet (1976-1980)
President Fred Doyle (1980-1984)
President Gottfried Konecny (1984-1988)

15th ISPRS Congress 1984 in Rio de Janeiro

1984 Congr. Director Placidino Fagundes

1988 Congr. Director Shunji Murai
At the 1980 Hamburg Congress we wanted China to become a new ISP Member.

The Chinese Taipei Society had already been a member, but was not able to represent Beijing.

We changed our Statutes to admit „Countries and Regions thereof, which have an Independent Budget“, so that both societies could be Members.
Maybe ISP(RS) was 10 years ahead of the times, but our decision worked well
The Chinese Delegation at the Paris Congress 1934
In 1983 ISPRS had 2 Members of Council, who had difficulties to travel to the Soviet Union, when we were invited to hold a Council Meeting in Minsk (George Zarzycki and Hans Jerie) see below

On the other hand, Ivan Antipov, see above our host in Minsk, could not travel to West Berlin, where we had an alternate invitation.

We held both meetings.
In 1983 the German Government and ESA financed the „Metric Camera Experiment“ from Space Shuttle, networked with ISPRS individuals.

10% of the earth’s land mass was covered in stereo in the 9 day mission.
the film was developed at DLR or IGN. A beautiful strip was taken over the GDR. The Government, not wanting to admit that imagery had been taken over a socialist country, did not include the images in the catalogue.

Instead, copies of these images were taken informally to our ISPRS friends in the GDR by car.
the favourable response came later in 1987, when ISPRS was brought to Leipzig for a meeting, where the colleagues of the Sovjet Union (Kienko and Drazhniuk) openly showed us their KFA 1000 images.
16th ISPRS Congress 1988 in Kyoto

Opening in the Kyoto Congress Center
President Kennert Torlegard 1988-1992

17th ISPRS Congress 1992 in Washington

Congress Director Larry Fritz 1992

President Shunji Murai 1992-1996
Election of Honorary Members at the Kyoto Congress 1988

Wang Zhi Zhuo, Aino Savolainen, Fred Doyle
18th ISPRS Congress 1996 in Vienna

Congress Director
Karl Kraus

Congress Opening in the Vienna Hofburg (Hofrat Neumaier & Ms. Kraus)

19th ISPRS Congress 2000 in Amsterdam

Congress Director
Klaas Jan Beek

Program Chair
Marteen Molenaar
Some Memories from Vienna 1996:

Karl Kraus said in 1992:
„there are 10 reasons, why the 1996 Congress should go to Vienna again after 83 years, and one of them is Karl Kraus“. Some of the other reasons are shown below:

- Johann Strauss Music in the Hofburg
- Dance in the Rathaus
- Party at Schloss Grafenegg
20th ISPRS Congress 2004

in Istanbul

Congress Director 2004
Orhan Altan

President (2000-2004)
John Trinder

Congress Center
Fashion Show in Dolmabahce
Gamble Award to V.P. Savinych
21st ISPRS Congress 2008 in Beijing

Congress Director 2008 Chen Jun
National Society President Yang Kai

President (2004-2008) Ian Dowman
President (2008-2012) Orhan Altan

Congress Center

Commission Presidents 2004-2008

Council 2004-2008
22nd ISPRS Congress 2012 in Melbourne

Cliff Ogleby, Congress Director

25 August – 1 September 2012
Melbourne Convention and Exhibition Centre,
Melbourne, Australia
The Brock Gold Medal Winners

Bertele 1956
Schmerhorn 1960
Schmid 1968
Helava 1972
Ackermann 1976
Hobrough 1980
Doyle 1984
D. Brown 1988
Tjuflin 1996
Dangermond Kasturirangan 2000
Gruen 2008

photo missing of Brachet 1992
Honorary Members

- Dolezal (1926-1955)
- Von Orel (1938-1941)
- Poivilliers (1948-1968)
- Baeschlin (1952-1961)
- Nistri (1952-1962)
- Santoni (1952-1970)
- Schermerhorn (1952-1986)
- O.S. Reading (1952-1984)
- Bauersfeld (1956-1964)
- Cassinis (1956-1964)
Honorary Members

Härry 1956-1973
Hurault 1956-1973
Schwidefsky 1972-1986
Thompson 1972-1976
Löfström 1976-1984

Masson d’Autume 1976-2006
Cruset 1980-1994
Solaini 1980-1989
Fagundes 1984-1996
Wang 1988-2002
Honorary Members

missing are images of

-Mogensen, Sweden 1956-1969

Honorary Members

- Doyle 1984
- Savolainen 1988
- Konecny 1992
- Ackermann 1996
- Murai 2000
- Fritz 2004
- Gruen 2008
- Trinder 2008
What is ISPRS?

a Strong Network

working in
Working Groups
(Banff 2005)

working in
Commission Symposia
(Tokyo 2006)
Working through their Regional Members with Annual Meetings

such as
Asian Association of Remote Sensing

or
European Association of Remote Sensing Laboratories

or also: African Association of Remote Sensing

and: Latin American Society of Remote Sensing
Or as NGO in cooperation with UN Agencies

e.g. UNOOSA Vienna
Or at National Meetings

e.g. Celebrations for the 100th Birthday of Prof. Wang Zhizhuo in Wuhan

e.g. at GEOSIBIR in Novosibirsk
Russian Federation
Or at special Conferences

e.g. Map Middle East

In Dubai with GIS Center Director Al Zaffi and Vanessa Lawrence, CEO of Ordnance Survey

In Stuttgart with Cornelia Glaesser, President of German Society

e.g. Events of the German Society for Photogrammetry, Remote Sensing and Geoinformation
This is the confirmation, that after 100 years our philosophy is still the same:

1. Photogrammetry and Remote Sensing are an independent engineering discipline providing spatial information to the society via images

2. We need continuous input from the sciences and other engineering disciplines, but the exponential growth in computer performance guarantees our growth

3. Society needs our services, which only we can provide because of our professional interest.
What are then the problems our disciplines are facing?

The problems are sociological in nature:

1. do we have political support?
2. do the laws sufficiently protect our professional interests?
3. what is the esteem scientists and engineers have in society?

If we are not sufficiently heard, what are the alternatives for us?

1. to get engaged in social, economic, political and ultimately ethical issues
2. who can give us guidance in our approach to solve problems in integrating photogrammetry and remote sensing into a greater context?
Questions we need to answer

1. what do we know? what are our limitations (Kant) (Socrates: „I know, that I know nothing“)

2. what are our values? (religion, philosophical ideas)

3. how do we interrelate with society? (Epicure versus Marx)

4. how do we achieve
   - sustainable development (UNCED Rio 1992)?
     by good governance?
   - sustainable happiness (where is paradise)?
     by moral standards?
   - a sustainable world (environment, peace)?
     by tolerance?
possible answers

1. We are too busy and do nothing (present Western society), when problems arise there is despair

2. We take our answers from our religious beliefs (for dogmas, there may be lack of tolerance and conflict)

3. We take advice from philosophers (they analyzed it all, but they are unable to tell us what to do)

4. So we must find our own answers
In retrospect, the answer is simple:

1. We should not be, what the Germans call a „Fachidiot“ and what Google translates as „Professional Idiot“, we need to look across the „fence“

2. We should focus our work on society’s needs, the environment, world poverty, world peace

3. We should communicate our possible contributions to those who need to know
   - our politicians
   - the professional elites
   - the public

4. Society will always criticize what you say, but not, what you do