35 YEARS OF CIPA

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ABSTRACT:
With the opportunity if celebration CIPA's 35th Anniversary, tribute is being paid to the pioneers at the field of Architectural Photgrammetry and especially to Hans Foramitti. A brief historical note and the main accomplishments of CIPA during these 35 years are presented, together with a review of the critical issues in its evolution. The impact of the new technology is presented and an outlook to the next years is attempted.

1. 35 YEARS OF ACCOMPLISHMENTS

It all began when on 4 – 6 July 1968 in Saint Mandé/Paris, France, a Colloquium on the Applications of Photogrammetry to Architecture organised by ICOMOS (International Council on Monuments and Sites) and Maurice Carbonnell (CIPA's Honorar President) with 36 participants from 11 countries.

The ISP (International Society of Photogrammetry) was represented by Raymond Chevallier, President of Commission VII. The Proceedings were edited by ICOMOS, Paris 1969 numbering 181 pages.

Among the important resolutions, it is quoted " …To constitute a joint ICOMOS-ISP Committee to further develop Architectural Photogrammetry…".

In 1983, in an ICOMOS publication, M. Carbonell writes:
"…When, in 1968, the ICOMOS took the initiative of convening the first international symposium on the application of photogrammetry to historical monuments, a number, of eminent experts were able to show how the current requirements of the scientific study of historic buildings, and conservation and restoration were creating an imperative need for surveys that were accurate and reliable. It is primarily as a result of this trend in the direction of a stricter attitude towards the idea of conservation and of stricter standards for the documentary records which must serve its needs that these last twenty years have seen such revolutionary progress in architectural photogrammetry.

But the symposium further stressed that "the initial effort to be made must be an effort to break with habit and to become alive to the efficacy, reliability and mastery which a few thousand stereograms can afford the authorities in charge of the conservation of historic buildings and ancient towns" (A.J.Donzet). Architectural photogrammetry's "second chance" was the achievement of those few men who proved capable of making that "initial effort". One of them, Hans FORAMITTI (1923-1982), had an outstanding role, and it is this above everything that we wish to recall in the present brochure…" (Carbonell, 1983)

In order to pay tribute to the role of this pioneer, CIPA decided to celebrate its 35th anniversary with this session, named after him.

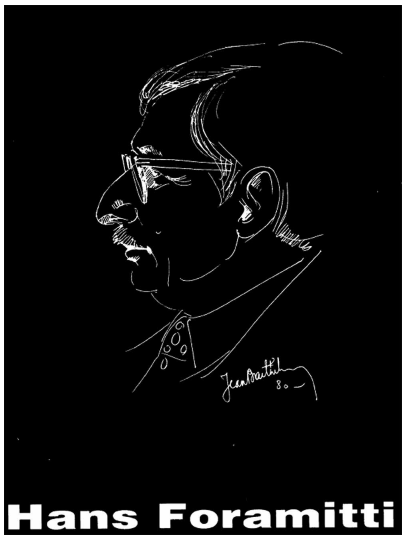


Figure 1: Hans Foramitti's caricature


A Venzone, en octobre 1981. De gauche à droite, Maurice Carbonnell, Franjo Braum, un ami de Venzone, Sergio Lucarelli, Miriam Calderari, Hans Foramitti, Cevat Erder

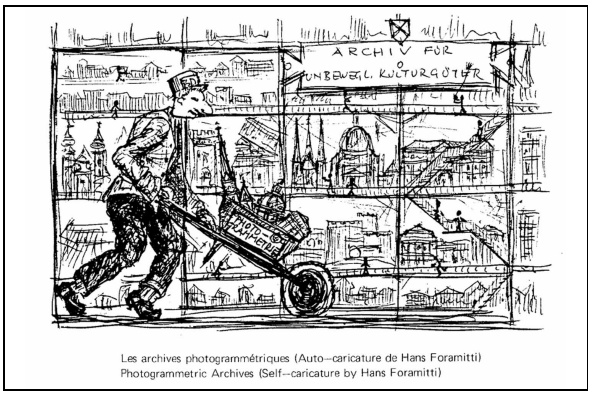
Figure 2: Hans Foramitti among other CIPA pioneers

> Deeply concerned as I was in those days by the speed at which the monuments of Turkey were deteriorating and being destroyed and desperately preoccupied to find a means of providing at least a speedy documentation, I found in Hans a close friend and a wise counsellor. He had no difficulty in persuading me of the advantagesof architectural photogrammetry and we set to work at once to establish together a photogrammetry laboratory.
>
> Cevat ERDER

Figure 3: Cevat Erder about Hans Foramitti

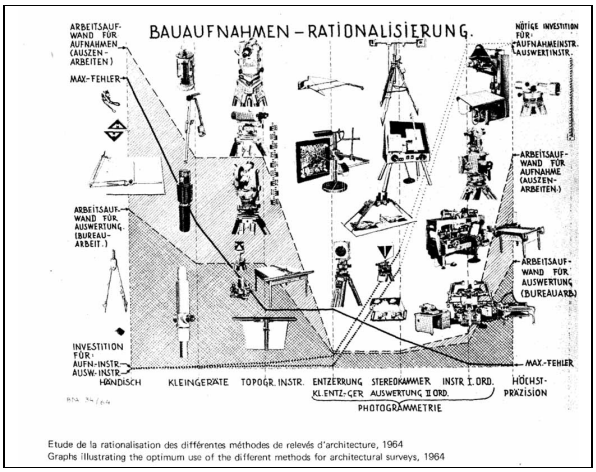
Even at these early days, the importance of speedy documentation (Fig. 3), and the maintenance of photogrammetric archives

(Fig. 4) were put forward with emphasis, whereas the optimum use of the existing documentation techniques was investigated (Fig. 5).



Les archives photogrammétriques (Auto–caricature de Hans Foramitti)
Photogrammetric Archives (Self–caricature by Hans Foramitti)

Figure 4: Foramitti was always stressing the importance of photogrammetric archives



Etude de la rationalisation des différentes méthodes de relevés d'architecture, 1964
Graphs illustrating the optimum use of the different methods for architectural surveys, 1964

Figure 5: Foramitti's illustration of different documentation methods

For the next 35 years the CIPA, either with the name "International Committee on Architectural Photogrammetry" or "Heritage Documentation" jointed the efforts of both ICOMOS and ISPRS to advance the understanding and the technical means for Heritage Documentation. During these years 19 bi-annual symposia and 2 Colloquia brought together hundreds of experts in the field (see Table 1), whereas CIPA also co-organized numerous other workshops and related events. CIPA wishes to express its gratitude and pay tribute to all those individuals and organizations, who undertook the burden of these organizations.

Currently 41 countries are delegated by either one or two representatives (with a total of 62 delegates), while 12 sustaining members (both public institutes and private organizations) are financially backing up are efforts. CIPA thanks them all for their support.

Table 1: CIPA Symposia

Symposium	Date	Place	Organizer
	4–6/7/1968	Paris, France	Maurice Carbonnell Raymond Chevallier
I	28/6-2/7/1971	Brno, Czechoslovakia	Miloslav Jirinec
II	23-26/9/ 1973	Lucca, Italy	Gino Parenti
III	12-16/5/1974	Athens, Greece	John Badekas
IV	10-13/5/1976	Bonn, Germany	Günther Borchers, Carl-Wilhelm Clasen
V	9-14/10/1978	Sibenik, Yugoslavia	Franjo Braum
VI	20-22/6/1979	Cracow, Poland	Josef Jachimski
Colloquium	15-17/9/1980	Paris, France	Maurice Carbonnell
VII	16–19/9/1981	Vienna, Austria	Karl Kraus Peter Waldhausl Gottfried Boehm
VIII	8-20/10/1982	Siena, Italy	Mario Fondelli
IX	22-24/10/1984	Tunis, Tunisia	Abdelaziz Daoulatli M. Carbonnell
Colloquium	13-15/10/1986	Strasbourg, France	Maurice Carbonnell
X	27-29/10/1987	Granada, Spain	Antonio Almagro
XI	4-7/10/1988	Sofia, Bulgaria	Georgi Hadjiev
XII	24-26/10/1989	Rome, Italy	Mario Fondelli
XIII	23-26/10/1987	Krakow, Poland	Jozef Jachimski
XIV	2-5/10/1991	Delphi, Greece	John Badekas, Andreas Georgopoulos
XV	22-25/9/1993	Sinaia, Romania	Ion Gr. Sion
XVI	1-3/10/1997	Goeteborg, Sweden	Anders Boberg Bosse Lagerqvist
XVII	3-6/10/1999	Olinda, Brazil	Camillo José Martins Gomes
XVIII	18-21/9/2001	Potsdam, Germany	Joerg Albertz
XIX	30/9-4/10/2003	Antalya, Turkey	Orhan Altan
XX	27/9-1/10/2005	Torino, Italy	Sergio Dequal

CIPA's main aim being to bring in dialogue two worlds: this of ISPRS and this of ICOMOS, targets its activities in close cooperation to many Technical Commissions and related Working Groups of ISPRS (see Table 2), and at the same time is in close contact with almost all the International Scientific Committees of ICOMOS (see Table 3).

Table 2: CIPA-ISPRS Matrix of interrelations

ISPRS - WGs		CIPA
Com I	WG I/1 - Define Standards for Sensor Parameters	
	WG I/2 - Sensor Calibration and Testing	
	WG I/3 - Active Sensor Systems	
	WG I/4 - Advanced Sensor Systems	
	WG I/5 - Platform and Sensor Integration	
	WG I/6 - Airborne Optical Sensor Systems	
Com II	IC WG II/IV - Systems for automated geo-spatial data production and updating from imagery	
	WG II/1 - Real Time Mapping Technologies	

	WG II/2 - Systems for SAR and LIDAR processing	
	WG II/3 - Integrated systems for information services	
	WG II/4 - Image data standards	
	WG II/5 - Design and operation of spatial decision support systems	
	WG II/6 - Spatial analysis and visualization systems	
Com III	WG III/1 - Sensor Pose Estimation	
	WG III/2 - Surface Reconstruction from Images as Information Source	
	WG III/3 - 3-D Reconstruction from Airborne Laser Scanner and InSAR Data	
	WG III/4 - Automated Object Extraction	
	WG III/5 - Algorithms for Industrial Vision	
	WG III/6 - Multi-Source Vision	
	WG III/7 - Modeling Large Scale Urban Environments	
	WG III/8 - Reliability and Performance of Algorithms	
Com IV	WG IV/1 - Spatial and temporal data modelling and analysis	
	WG IV/2 - Federated databases and interoperability	
	WG IV/3 - Data generalization and data mining	
	WG IV/4 - Spatial data infrastructures	
	WG IV/5 - Image-based geospatial databases	
	WG IV/6 - Landscape modelling and visualization	
	WG IV/7 - Data integration and digital mapping	
	WG IV/8 - Global environmental databases	
	WG IV/9 - Extraterrestrial mapping	
Com V	WG V/1 - Automation for Vision Metrology Systems and Industrial Applications	
	WG V/2 - Scene Modelling and Virtual Reality	
	WG V/3 - Medical Image Analysis and Human Motion	
	WG V/4 - Image analysis and spatial information systems for applications in cultural heritage	
	WG V/5 - Quick response and distributed computing for Close-Range Applications	
	WG V/6 - Visualization and Animation	
	IC WG V/III - Image Sequence Analysis	
Com VI	WG VI/1 - Education and Training	
	WG VI/2 - Computer Assisted Teaching	
	WG VI/3 - International Cooperation and Technology Transfer	
	WG VI/4 - Internet Resources and Distance learning	
Com VII	WG VII/1 - Fundamental Physics and Modelling	
	WG VII/2 - Sustainable Agriculture & Eco-system Approach	
	WG VII/3 - Integrated Monitoring Systems for Resource Management	
	WG VII/4 - Human Settlement and Impact Analysis	
	WG VII/5 - Disaster Monitoring, Mitigation and Damage Assessment	
	WG VII/6 - Monitoring and Modelling Global Change	

Table 3: CIPA-ICOMOS Matrix of interrelations

ICOMOS – International Scientific Committees	CIPA
GROUP 1. IDENTIFICATION, CONSERVATION AND PROTECTION OF SPECIFIC HERITAGE CATEGORIES	
Historic Towns	
Cultural Landscapes and Historic Gardens	
Vernacular Heritage	
Shared Heritage	
Underwater Heritage	
Cultural Itineraries	
Archaeological Heritage	
Polar Heritage	
Vernacular Architecture	
GROUP 2. MATERIALS, TECHNOLOGY AND PROCESSES OF CONSERVATION	
Wood	
Stone	
Vitraux	
Earthen Architecture	
Architectural Structures	
Rock Art	
Wall/Mural Painting	
GROUP 3. MANAGEMENT OF PROCESSES AFFECTING THE PROTECTION OF HERITAGE	
CIPA	
Cultural Tourism	
Legal, Administrative and Financial Issues	
Economics of Conservation	
Risk Preparedness	
Training	
Interpretation (Ename Goup)	

2. THE TRAJECTORY OF A PARADIGM

Over the years, wars, natural disasters and human negligence around the globe have resulted in humanity having fewer and fewer things to pass on to the future generations. As a result, documentation and conservation of cultural heritage are being increasingly seen as tasks of national –ultimately international– priority. The postmodern restructuring of world economies gave an enormous rise to technology, making it, at the same time, inaccessible to the majority of the human population. Restricted access to monument information posed by local bureaucracies, although not always irrational, did not help in the effective protection of the Cultural Heritage.

According to the ICOMOS report on "Principles for the Recording of Monuments, Groups of Buildings and Sites" [URL1] and the article 16 of the Venice Charter [URL2] *"In all works of preservation, restoration or excavation, there should always be precise documentation in the form of analytical and critical reports, illustrated with drawings and photographs. Every stage of the work of clearing, consolidation, rearrangement and integration, as well as technical and formal features identified during the course of the work, should be included. This record should be placed in the archives of a public institution and made available to research workers."*

On a similar line, the ICOMOS Charter for the Conservation of Historic Towns and Urban Areas [URL3] puts the emphasis on public involvement through better identification, understanding, interpretation and presentation of cultural heritage. It also emphasizes the dissemination of the recorded information, to

permit informed management and control of all changes to cultural heritage.

The keywords in all the above statements and International Agreements are :

1. **Recording** of a vast amount of 4-Dimensional multi-source, multi-format and multi-content information, in proper levels of accuracy and detail.
2. **Inventory** by the use of photogrammetric and GIS-solutions in 3D and, as far as available, down dating with historical images.
3. **Management** of the 4D information in a secure and rational way, also available for **sharing** and **distribution** to other users.
4. **Visualization** and **Presentation** of the information in a user-friendly way, so that different kinds of users can actually retrieve the data and acquire useful information, using Internet and Visualization Techniques
5. Appropriate use and **tuning** of the up-to-date **Information Technology**, when aiming at the above tasks.

In this frame, Photogrammetry and Vision techniques are called upon to offer its services in a variety of levels and in all possible combinations of scientific procedures, quality requirements, use of final products, time restrictions and budget limitations. The interested reader can refer to general references like (Slama, 1980, Ogleby and Rivett, 1985, Karara, 1989, Atkinson, 1996) and visit [URL4], [URL5] for updates on current research activities and applications.

On the technical side, these imposed a myriad of interesting technical questions seeking answers. I will not further elaborated on that since we all have the opportunity to enjoy a lot of them during this Congress.

Architectural and Archaeological applications of Photogrammetry and Vision techniques can be classified in many ways and according to different parameters. One way to classify the applications in a comprehensive and rather "productive" way is shown below (Fig. 6).

On the semiotics level, these revealed some important aspects :

- The strict scientific rationale gave its place to a mobility across different disciplines, very similar to what Steger (Stengers, 1997) called “guerilla epistemology”, and I quote: “The problem of the contemporary sciences is not, for me, one of the scientific rationality but of a very particular form of mobilization: it is a matter of succeeding in aligning interests, in disciplining them without destroying them. The goal is not an army of soldiers all marching in step in the same direction; there has to be an initiative, a sense of opportunity that belongs rather to the guerilla.”
- Photogrammetry, for the first time, does not merely report on what can be seen. In other words, it produces reality itself. So it faces the challenges of intervention, generalization of reality, perception, and aesthetics.
- For long, time was separated from space. Although the 3rd dimension is still very important, the 4th dimension is increasingly valued.
- At a time when high-quality photogrammetric products are much needed, Do-it-yourself Photogrammetry is on the rise.

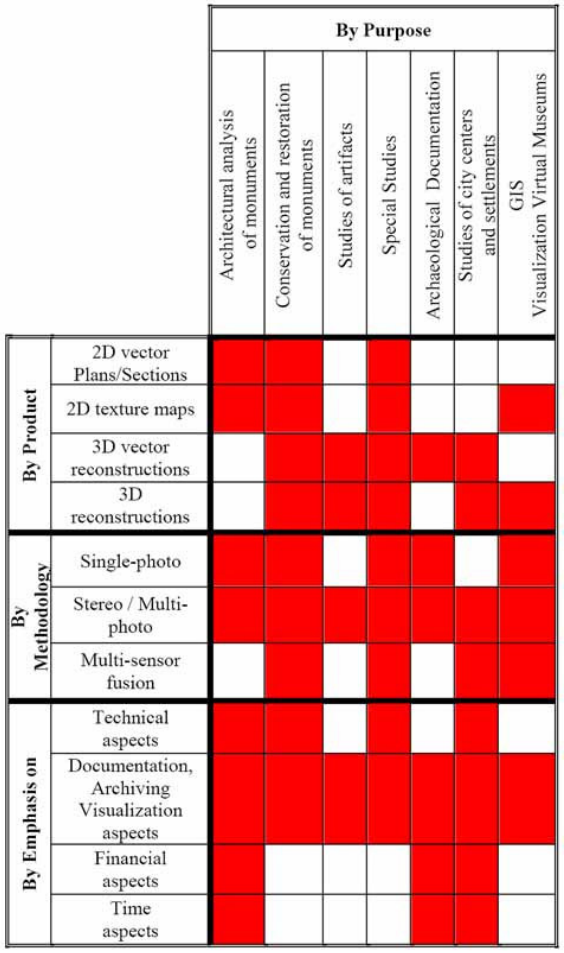


Figure 6: Classification of applications

On the managerial level, new work habits, new research opportunities, even new forms of institutions force Photogrammetry to offer its services in many gears and under different angles of view. Worth mentioning are the following :

- Post-industrial re-allocation of the capital resources require that accountability prevails and justification of the costs are always required. Many times costs should be highly suppressed due to limited budgets.
- The massive use of technology has occurred not because it is desirable end by itself, but because it is connected to more generic business aspects. Many tools, now in use in Photogrammetry, have been designed and brought eventually to our discipline.
- Innovative research is increasingly coming from non-governmental institutes and non-academic laboratories.
- In Europe and North America (at least for the 2/3 of the population) the work time is reducing and people tend to spend much of their free time in cultural activities. So a new market is emerging and Photogrammetry can claim its share.
- Small enterprises on a knowledge-intensive basis with suppressed capital and operational costs are appearing as an answer to the market-pull.
- Terms like Standardization, Quality assurance and Intellectual property rights are entering our Agenda.

3. THE IMPACT OF NEW TECHNOLOGY

Unlike typical aerial mapping applications, architectural and archaeological applications are almost always intriguing, challenging and one-of-a-kind problems. For these reasons, the impact of the new technology on such applications was even more profound. In accessing this impact, one should underline the following major contributions (Patias, 2001):

- The research and application area is increasingly broadened and diversified.
- It becomes increasingly clear that both mature and innovative technology can benefit and earn added value from cooperation with other disciplines (Patias and Peipe, 2000).
- Photogrammetry becomes more popular (either as a technique or as final products) among end-users, since it is proved to be an accessible, usable and cost-justifiable technology for many industrial, educational and public/private sectors.
- Although high-end technology is always attractive and in some parts of the world accessible and useful, one should always bear in mind that in very many cases low-end instrumentation is the only viable solution. Photogrammetry is continuously offering low-cost systems and procedures, thus opportunities for democratization of the information and its access as a "public good".
- Visualization techniques and VR output attract increasing interest and become more rewarding both for the researchers and the end-users. This technology promises more detail, better quality, more accuracy, and a wide array of applications. This will inevitably lead to what is nowadays perceived as "Virtual Heritage".
- Photogrammetry, for the first time, is producing Reality, other than or besides the real one. Virtuality and Visualization outputs a new world, a generalized world, a sometimes altered world. Besides perception and aesthetics issues now emerging, more important issues should also enter our Agenda: Is the proper respect and care for our cultural past sacrificed in favor of the current "VR Anxiety" (Ogleby, 1999) (counter-examples of naive visualization products already exist).

4. CONCLUSION AND OUTLOOK

New work habits, new research opportunities, and even new forms of institutions force photogrammetry to offer its services in many aspects. Photogrammetry provides large amounts of highly detailed, very accurate, geo-referenced, 3D vector and texture data, with stereo-viewing abilities and metadata information. This constitutes its comparative advantage over other techniques and procedures.

Evaluating the current status and envisaging the future evolution of architectural and archaeological applications of photogrammetry, one could note that :

- Classic technology is very mature and the applications based on it are straightforward. Therefore there are many different applications reported, and this has a nice impact on the end-users, since it attracts their attention.
- New technology is entering the picture in growing rates and this drives innovative research. This fact gives rise to rapidly emerging new concepts, and as a spin-off-result it attracts participation from related disciplines.
- New issues are entering the research agenda, like standardization issues, systems for quality management, intellectual property issues. It is quite important to note that, although conformance to intrinsic quality measures (ie. standards) will always be necessary, it is only one part of the story. Quality can only be determined by "fitness for use". Ultimately, quality evaluation needs to include user demands. In building market positions, this means that one should be able to distinguish different groups of users and recognize typologies of quality demands.

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URL2:[http://www.international.icomos.org/e_venice.htm#historic] UNESCO Venice Charter, 1964 *(accessed 20-4-04).*

URL3:[http://www.international.icomos.org/e_towns.htm] ICOMOS Charter for the Conservation of Historic Towns and Urban Areas (Washington Charter, 1987) *(accessed 20-4-04).*

URL4:[*http://www.isprs.org/technical_commissions/tc_5.html*] ISPRS / Commission V web page *(accessed 20-4-04).*

URL5: [*http://cipa.icomos.org/*] CIPA web page *(accessed 20-4-04).*