

# WELCOME TO ICGG 2024 !

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ITALY

President in Office of ISGG (2021-2024)

# WELCOME

On behalf of the *International Society for Geometry and Graphics – ISGG ...*

- welcome to the **ICGG participants** from all over the world!
- welcome to the **ISGG participants** from all over the world!
- welcome to all the **guests** from all over the world!

*... to the 21<sup>st</sup> International Conference on Geometry and Graphics – ICGG 2024*

**finally**

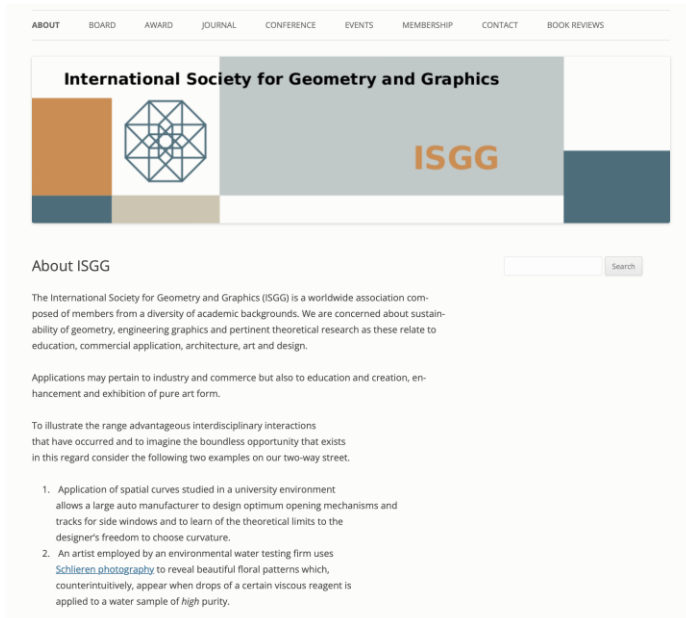
**a new «face-to-face» event**

**after six years!**

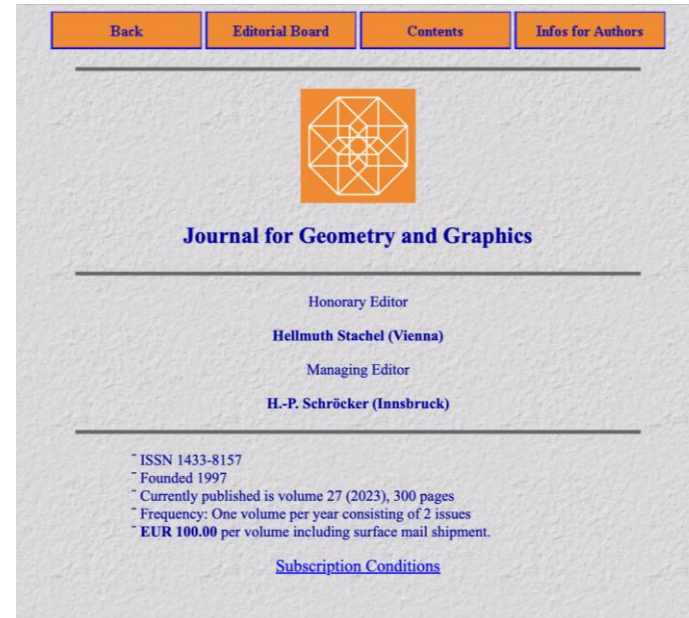


# PREAMBLE

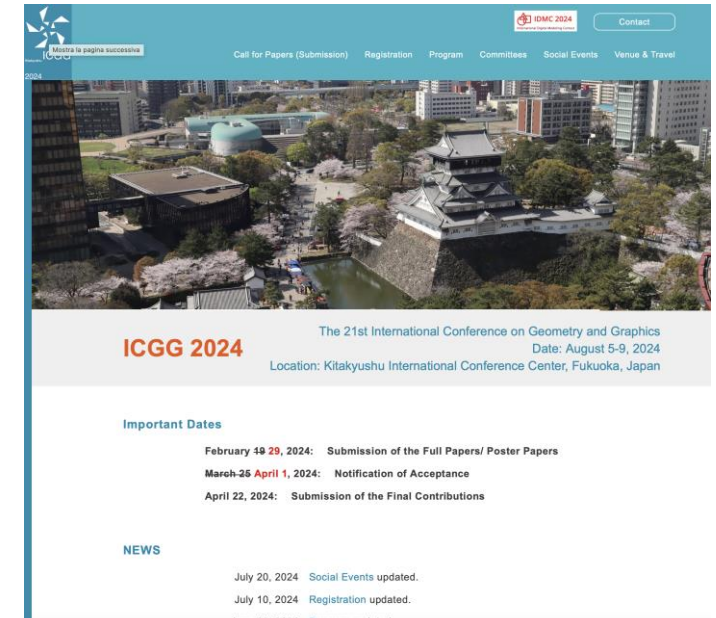
# WHO WE ARE AND WHAT WE WANT



**ISGG**  
Scientific Society  
(since 1992/1994)



**JGG**  
Scientific Journal  
(since 1997)



**ICGG**  
Scientific Conference  
(since 1978)

# MISSION

The objective of the Society  
is to foster international collaboration  
and stimulate scientific research  
and teaching methodology  
in the fields of geometry and graphics

# MEMBERSHIP

The Society is an organization  
of *individual* and *institutional* members,  
and *associated national organizations*  
( IM & ANO )

In 2022 a biannual meeting with IM & ANO has been established

## The Japan Society for Graphic Science - JSGS

Research Group Geometric Modeling and Visualization – Technische Universität Dresden

Österreichischer Fachverband der Geometrie (ADG)

Slovak Society for Geometry and Graphics

Deutsche Gesellschaft für Geometrie und Grafik

Associação Brasileira de Expressão Gráfica

Engineering Design Graphics Division of the American Society for Engineering Education

Hungarian Society for Geometry and Graphics

Croatian Society for Geometry and Graphics

China Graphics Society

Polish Society for Geometry and Engineering Graphics

Serbian Society for Geometry and Graphics (SUGUG)

Unione Italiana Disegno (UID)

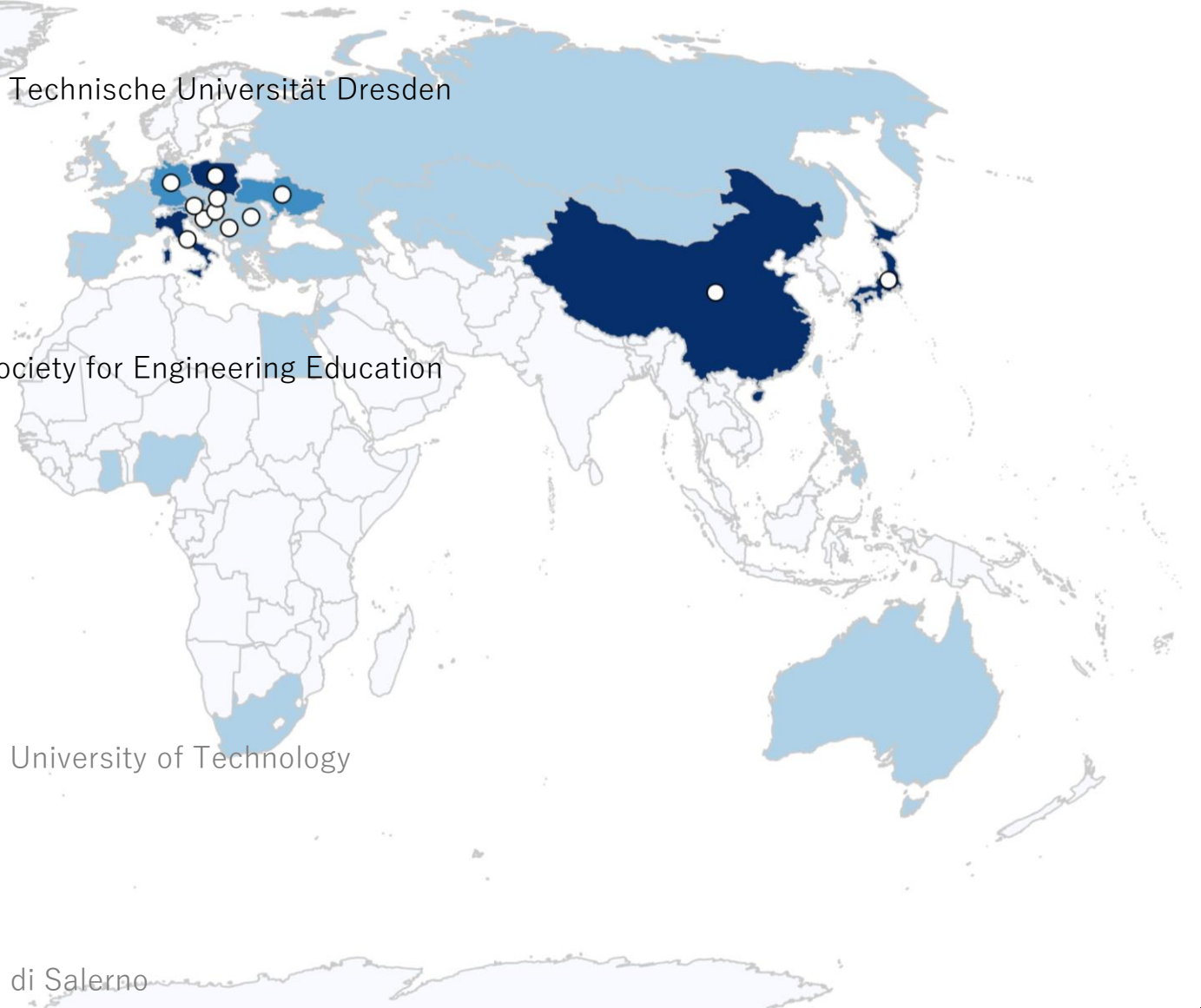
Institut of Discrete Mathematics and Geometry – Vienna University of Technology

The Ukrainian Association of Applied Geometry

Institut of Geometry – Graz University of Technology

Romanian Society for Engineering Graphics (SORGING)

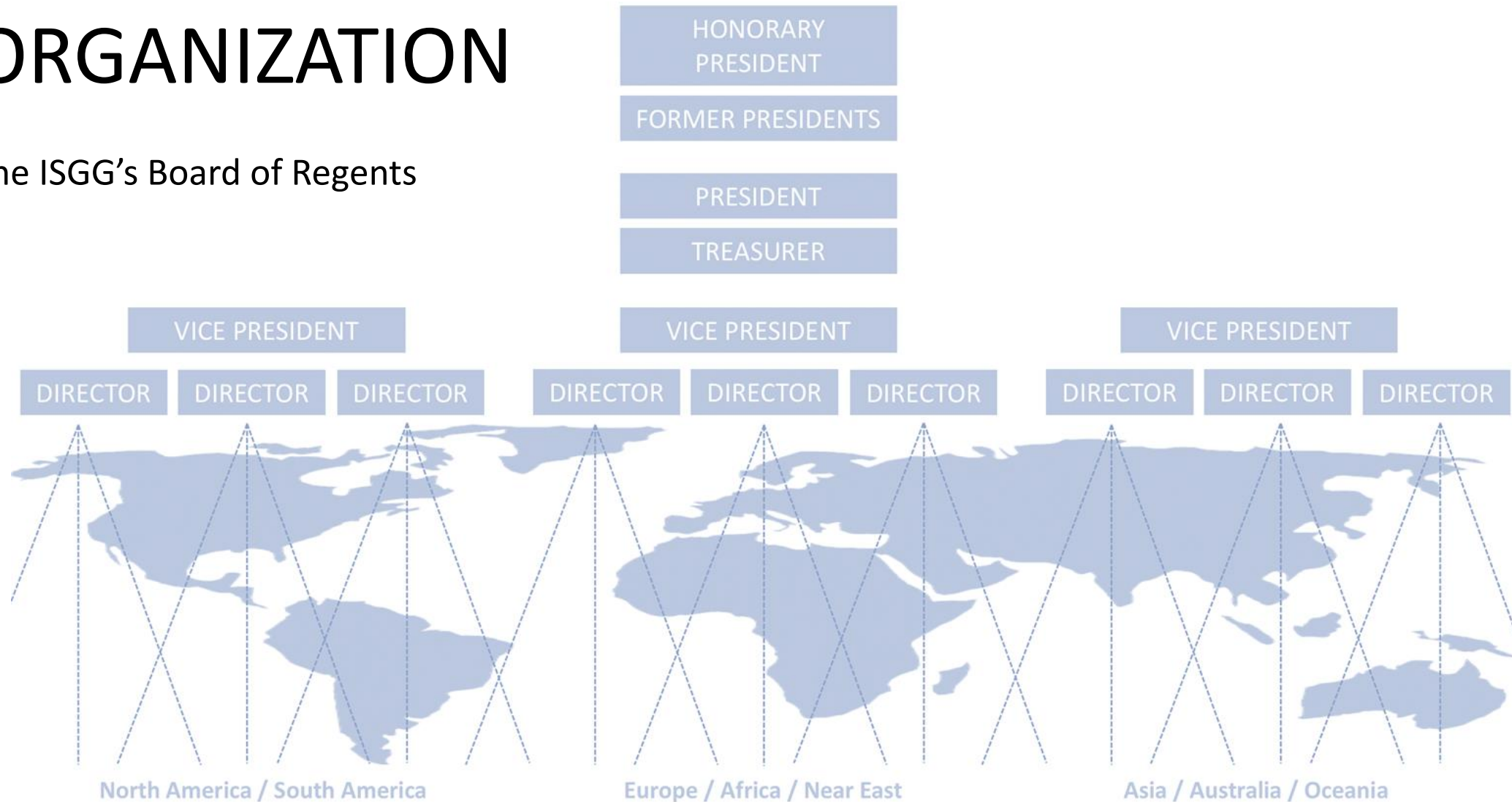
Dipartimento di Ingegneria Civile – Università degli Studi di Salerno





# ORGANIZATION

The ISGG's Board of Regents



# BECOME AN ISGG MEMBER!



# ICGG 2024

# ABOUT

*The rich scientific program,  
venue and social program,  
and the excellent organization  
claim for a successful and  
memorable event in the  
ICGG series!*

# PARTICIPATION

ICGG2024's world by flags



# ACKNOWLEDGMENT

Special thanks to:

Honorary Chairs

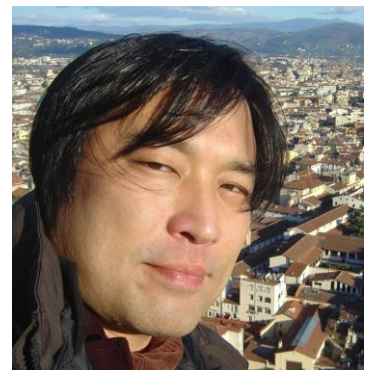
Co-Chairs

Steering Committee

Program Committee

Japan Society for Graphic Science (JSGS) - President Hirotaka Suzuki

Patrons and Sponsors



# ACKNOWLEDGMENT

## Executive Committee:

### Chair

- Kazuki Takenouchi

### Co-Chairs

- Kazuya Kojima
- Yosuke Morioka

### Organizing Team

- Kazuja Saito, Maiko K. Tsujii, Shingo Nakanishi, Takefumi Otsu, Tetsuo Kaneko, Toru Ihara



# PLENARY PUBLIC EVENTS

2nd Meeting with Institutional Members and Associated National Organizations of ISGG (IM & ANO)

August 08, 13:20 – 14:50

## **ISGG: cooperative mission in the AI era**

Round of proposals from the representatives of the Institutional Members and Associate National Organizations of ISGG, and public discussion about initiatives and strategies aiming at:

- sharing information about collaborative projects and opportunities for research and education in the field of Geometry and Graphics worldwide
- collecting and sharing scientific repositories of indexed publications
- supporting the interaction with local public institutions
- expanding the ISGG network worldwide



# RELATED PLENARY PUBLIC EVENTS

IDCM – International Digital Modeling Contest

August 08, 15:10 – 16:40

Chairman: Hirotaka Suzuki

Vice-chairman: Yuji Katagiri



*«The Digital Modeling (Digital Content) Contest positions creation as an academic activity and will be held while maintaining the contest format.»*

*One of the goals of the contest is to explain in an easy-to-understand manner the process from the purpose of creating the work to the model production, with an emphasis on necessity and preservation of the process.*

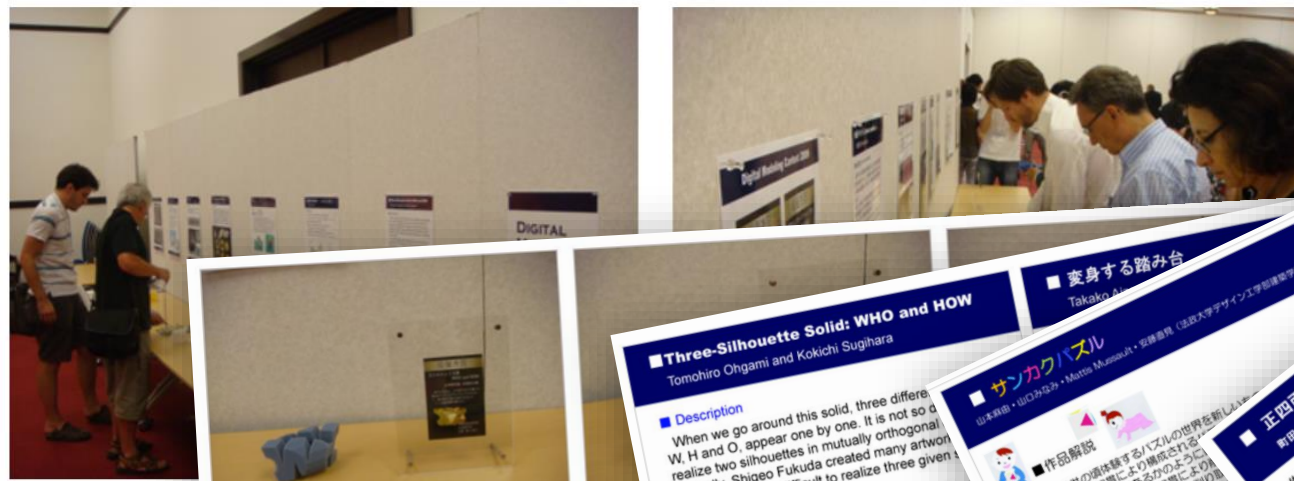
*To make effective use of 3D modeling machines, it is important to have content that can be used for 3D modeling, such as educational works and resource works.»*

# Points of interest

1. The Japan Society for Graphic Science has been organizing the "Digital Modeling Contest" for the past 17 years. Building on this experience, they have expanded the scope of the contest this year to include a broader range of fields and have opened it to international submissions.
2. The aim of this contest is to promote the use of foundational technologies that inspire the creation of three-dimensional mechanisms and objects using 3D printing.
3. The submitted works showcase the full process from idea to finished product. Each entry is verified during judging for its initial concept, 3D modeled data, and final 3D printed object.
4. The contest will feature a public exhibition of the submitted works.
5. The purpose of this exhibition is to showcase how geometry and graphic science are essential and beneficial fields for everyone, as demonstrated through the displayed works.

# Some former outcomes at a glance

ICGG 2010 (Kyoto) domestic modeling contest



(図3 3シルエット立体)


(図6 hexagon)

**Three-Silhouette Solid: WHO and HOW**  
Tomohiro Ohgami and Kokichi Sugihara

**■ Description**  
When we go around this solid, three different silhouettes appear one by one. It is not so difficult to realize two silhouettes in mutually orthogonal directions (actually, Shigeo Fukuda created many artworks using this method), but it is difficult to realize three given silhouettes in one solid.  
Three-silhouette solids might give us new directions for applications of 3D objects, such as sculptures, 3D printing, and trick art.

**■ Method**  
Given three silhouettes, we generate the cylinders by sweeping the silhouettes, and next generate their intersection.  
The intersection does not realize the silhouettes in general; some of the silhouettes will be cut off by other silhouettes.  
So, we search for the mutual intersection locations of the three cylinders so that all the three silhouettes are realized.  
We avoid costly exhaustive search by a hill climbing method based on a heuristic measure of goodness.

**HOW**



**サンカク・パスル**  
山本利由・山口正彦・Matsumoto Masahito・佐藤昌典 (京都大学デザイン工学部建築学科)

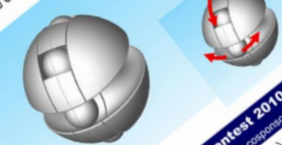
**■ 作品解説**  
直しちが子供の遊具であるパスルの世界を創出した。3つの三角形の相関により構成される。3つの三角形の2つの三角形の相関により構成される。1つの三角形の相関により構成される。互いの相関により生まれるカタチは複雑な形では、単純な外形の内部に複雑な形が

**正四面体の連結から生まれる形**  
野田 秀典, Yoshitaka MACHIDA 野田 秀典, Koji Nishitani

**■ 作品解説**  
正四面体を連結させ、連結面と連結角度の変化によって生まれる形を遊ぶ玩具である。内部の面と外部の面が入れ替わるように風船を膨らませると、結晶体のような立体を作り出すこともできる。幾何的な形状が必要だが、それを考えることにより、立体への発想力が求められることを期待している。連結数によって

**原子モデル Atomic model**  
新里 浩司 Nishito Kouji

**■ 作品解説 Work commentary**  
原子モデルを模式的に表現しました。本体の球体部分で電子全体をイメージし、その球体上の面に電子をイメージした小球を6個配置し、演に沿って自由に移動できる構造にしました。球体の一部を薄くは電荷方向に回転する構造にし、その回転部分を中心に電荷を表現しました。I expressed an atomic model for a chart. I imaged a whole atom with the main body and imaged electrons with the small balls placed around the main body. I expressed movement of electrons by small balls having movement of three dimensions.



**Digital Modeling Contest 2010**  
Japan Society on Graphics Science coposponsor Altech co., ltd

(図14 原子モデル)

(図7 正四面体)

(図9 3シルエット立体)

(図11 サンカク・パスル)

# Some forme outcomes at a glance

ADMC2017 Catalog for the Asia Digital Modeling Contest

## Asian Digital Modeling Contest 2017 Finalists & Awards

### Grand Prize

Duality

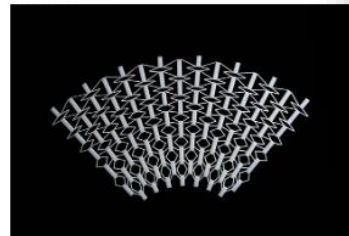
Masanori Nakayama, Issei Fujishiro



### Award for Excellence

Pre-programmed deformable mater

Taisuke Ohshima, Tomohiro Tachi,  
Yasushi Yamaguchi



### Finalist

3D-Materials for Mechanical Design a  
Drawing Education --Technical  
Assistance Through Experience  
Tsutomu Araki



### Finalist

Design by Spheres -- A Project for  
Museum  
Naomi Ando



### Award for Excellence

Chladni Towers  
Martin S

### Finalist

Design lamp shade  
Kimihiro Miura



### Finalist

Natalie's Ramonda pavilion  
Biljana Jović, Komnenov Mirjana



### Finalist

Triskelion Blocks  
Akihiro Matsuura, Hiroshi Shirane



# PLENARY PUBLIC EVENTS

Closing Ceremony

August 09, 09:00 on



- IDMC Award Ceremony
- ISGG Members Meeting – report and info about ISGG, JGG, ICGG
- Steve Slaby Award
- Loyal Friends of ICGG's Award
- Conference Resolution
- Farewell Song *Auld Lang Syne* – free ICGG participants' performance, directed by Gunter Weiss, soundtrack remastered by Giovanni Albini ( info will follow! ) – thanks to Kazuya Kojima for the organizational support

# A SPECIFIC TASK OF THE ISGG BOARD

ISGG Board Meeting

August 6, 18:00 PM (restricted to Board Members only)

In this meeting relevant topics for ISGG will be discussed:

- ICGG Conference in 2026
- JGG Journal
- Awards
- International cooperation strategies
- Membership and budgetary items
- ISGG Elections

## Introductory Session

# THE ICGG's CONFERENCE SERIES: TOPIC AND MISSION

# Introductory Lecture

## **CHANGES IN THE ICGGs CONFERENCE TOPICS**

**A PATHWAY THROUGH GEOMETRY AND GRAPHICS OVER TIME  
FROM DESCRIPTIVE GEOMETRY TO ARTIFICIAL INTELLIGENCE**

Luigi Cocchiarella



# AN INPUT FROM THE 40th OF ICGG



# AN INPUT FROM THE 40th OF ICGG



# THE ICGG ARCHIVES (more than 30 volumes)



# ICGG PERIODS ACCORDING TO ICGG TOPICS

*Early start (1978)*

*Little gaps (1980-1986)*

*Proper start (1988-1998)*

*Mature age (since 2000)*

*Virtual break (2020/2021 and 2022)*

# EARLY START (1978)

Vancouver, Canada on the 50th Anniversary of the Engineering Design Graphics Division of the American Society for Engineering Education

Intended as «the first» conference by S. Slaby (Princeton)

115 registrants 53 spouses and guests 11 countries 6 canadian provinces and 30 states

[ **ICDG** ]



No Conference Topics but:

*Breakfast with experts*

*Workshops*

*\_applications of Descriptive Geometry to the solution of space problems and graph theory*

*\_Computer Graphics*

*\_the design and use of Instructional Models*

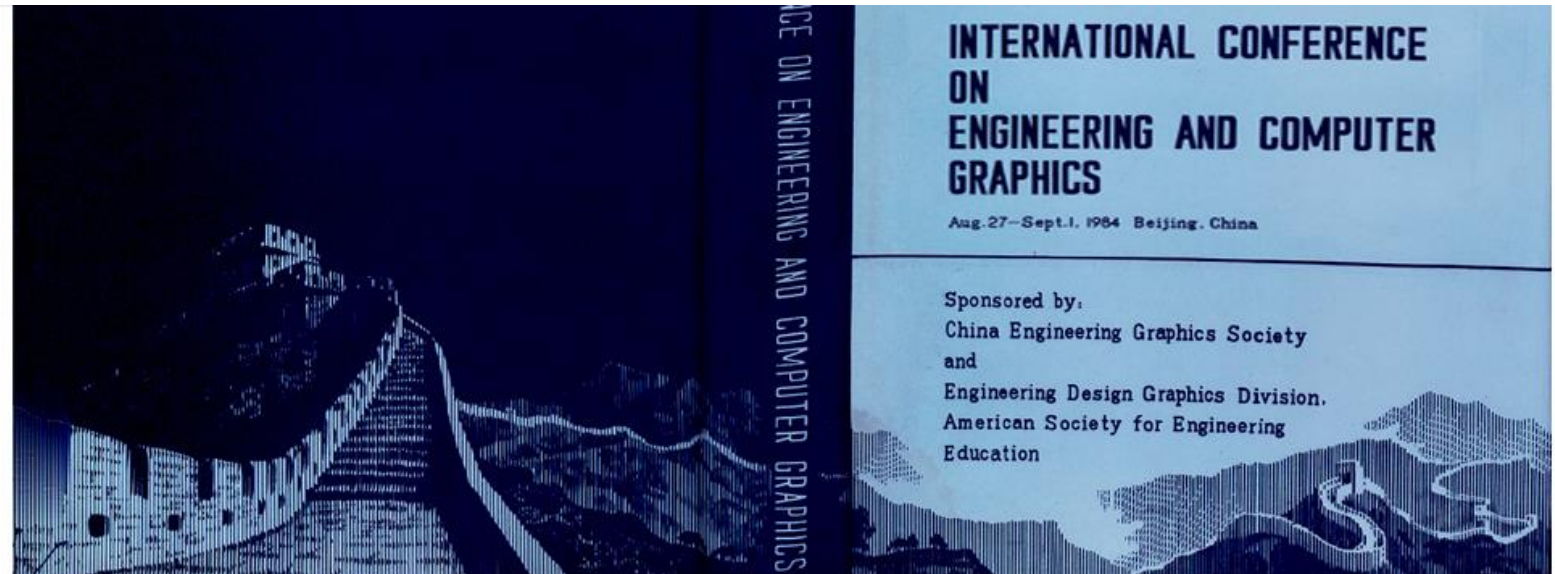
**Reflections on the role of Descriptive Geometry, be it on Drawing or Computer Graphics based, as  
«the intellectual center of engineering and architectural activity»**

*L. March, P. Steadman*

# LITTLE GAPS (1980-1982 and 1986)

Beijing 1984, Jointly sponsored by China Engineering Graphics Society and Engineering Design Graphics Division of the American Society for Engineering Education, intended as «the second» «The majority of papers ... deal with computer graphics ...» and the word Geometry disappeared from the title!

[ ICECG ]



Conference was mainly referring to the the area of Engineering Graphic Science

However, the appearance of «papers pertaining the theoretical graphics, applied graphics, graphics development, techniques of drawing as well as graphics education», a clear sign that wider conference topics were incubating

What is missing is an extended reference to Geometry

The next Conference would have been organized four years later, in 1988, skipping another relevant step in the initial evolution of the Digital

**Reflections on teaching Computer Graphics to architects and graphic artists, open to a creative use of the nascent Digital, based on geometrical transformations**

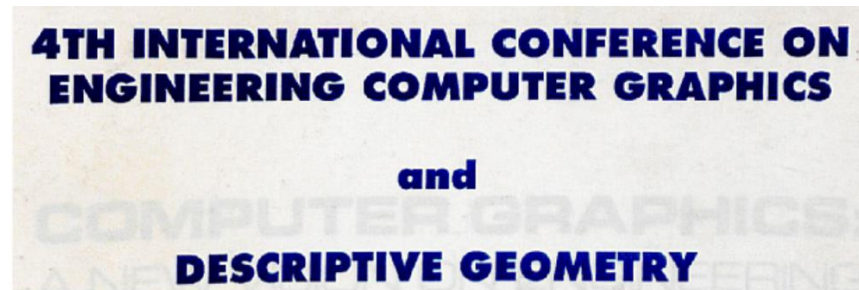
*W. Mitchell, R.S. Ligget*



# PROPER START (1988-1998)

Includes the series of Conference concluding the Millennium, finally organized on a regular base, biannually

During this period, not only the seed of our Conference sprouted, but also that of our Community, giving birth to the ISGG and to the JGG, and establishing the S. Slaby Award



## Third International Conference on Engineering Graphics and Descriptive Geometry (EG+DG) [ ICEGDG ]

Vienna 1998

Proposes an interesting change in the title, putting again Descriptive Geometry on the front stage

Although topics are not listed in the Proceedings, H. Stachel and S.M. Slaby emphasize the joint venture of Engineering Graphics and Computer Graphics with Descriptive Geometry, and the promising new ways to «visualize» physical and socio-economical data

The vision across Art and Science is expanded, breaking the traditional prejudice about the impermeability between the two fields

Reflections on the implications of Cognitive Neuroscience research on spatial and graphic abilities

*G.R. Bertoline*



## 4th International Conference on Engineering Computer Graphics and Descriptive Geometry [ ICECGDG ]

Miami 1990

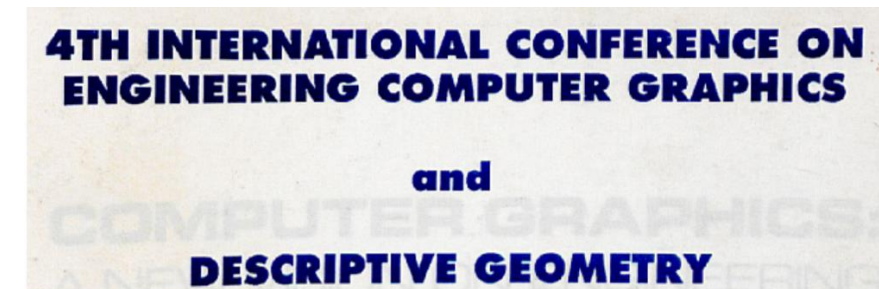
Gave start to the most unpronounceable acronym as ever: ICECGDG !

The word «computer» explicitly appears on the title, as a mediator between Engineering Graphics and Descriptive Geometry (published in the series *Computer Graphics: a New Vision on Engineering* indeed)

«Topics» are for the first time listed: Theoretical Graphics, Engineering Computer Graphics, Graphics Teaching, and Other applications of Geometry

Topics would have never been neglected in the future

Papers show a wide expansion of the Geometry based Computer Graphics applications, including Engineering, Design, Architecture, Urban Planning, Geotechnics, and Art



In addition a long list of «keywords» is also anticipated before the *preface*: Theoretical Graphics, Engineering Computer Graphics, Graphics Teaching, Descriptive Geometry, Visualization, Computer Aided Design (CAD), Surface Modeling, Computer Animation, Computer Software, Computer Application, Spatial Ability, Curriculum, Visual-Perception, Engineering Education, Engineering Graphics.

During the 1990 Conference the crucial decision to establish a Steering Committee with the goal to organize an *International Society for Geometry and Graphics* was finally taken (... maybe inspired by the amazing location!) ... so keeping the promise formulated in 1978.

## In-Between ...

In 1991, between the 1990 and 1992 Conferences, the *Steve M. Slaby Award* was established, in the name of the initiator of our cycle of Conferences

In 2022 the 100th anniversary from his birth has been celebrated during the 20th ICGG

Steve M. Slaby (courtesy H. Stachel)



## 5th International Conference on Engineering Computer Graphics and Descriptive Geometry (ECGDG) [ ICECGDG ]

Melbourne 1992

Slight changes in the Topics aimed at grouping items previously separated, like Theoretical Graphics and Applied Geometry, Engineering Computer Graphics and Computerized Design, as well as new ones were introduced, like Scientific and Technical Visualization, Graphics Teaching, Manufacturing and Other Applications

The wide spectrum of interests having Descriptive Geometry as a base, even in the Digital age, appeared clearly

During this conference, the first elections of the Board of the ISGG were planned !

**Reflections on computer not only as a mere calculation tool, but also as a potential design tool**

*W.E. Rodriguez*

**Reflections on students' spatial ability in relation to cognitive research and its applications to the development of CAI, as a relevant topic for educators**

*K. Suzuki*



## 6th International Conference on Engineering Computer Graphics and Descriptive Geometry [ ICECGDG ]

Tokyo 1994

Drastic reduction of Topics to the three essential: Theoretical Graphics and Applied Geometry, Engineering Computer Graphics, Graphics Education (where *education* replaces *teaching*, meaning a more comprehensive pedagogic approach)

It was the first conference with the new Board Elected

A «gem» in the Conference was the *Forum on Modernization of Graphics Education*, with contributions from four founding fathers of the Society, from the three world regions

Reflections on present and future of higher education in Engineering - *S.M. Slaby*

Reflections on Visual Thinking in relation to the modernization of Education - *W.E. Rodriguez*

Reflections on the role of Descriptive Geometry in grasping spatial relations - *H. Stachel*

Impact of Computer Graphics and Graphic Sciences in the Japanese Universities - *K. Suzuki*



## 7th International Conference on Engineering Computer Graphics and Descriptive Geometry [ ICECGDG ]

Cracow 1996

Emphasis on the public resonance of the Conference was given by the sponsorship by the Polish Ministry of Education, and the Polish State Committee for Scientific Research

Topics of the previous Conference were confirmed

Proceedings had for the first time an ISBN and an official placement in the updated international editorial context

Steve M. Slaby highlighted the opportunity to integrate Engineering Graphics, Descriptive Geometry, Computer Graphics and Theoretical Graphics, envisioning the impact on the world society

**Reflections on the relationships between hyperspace and cyberspace from the point of view of an artist, and in general, in relation to the design processes**

*H.E. Brisson*

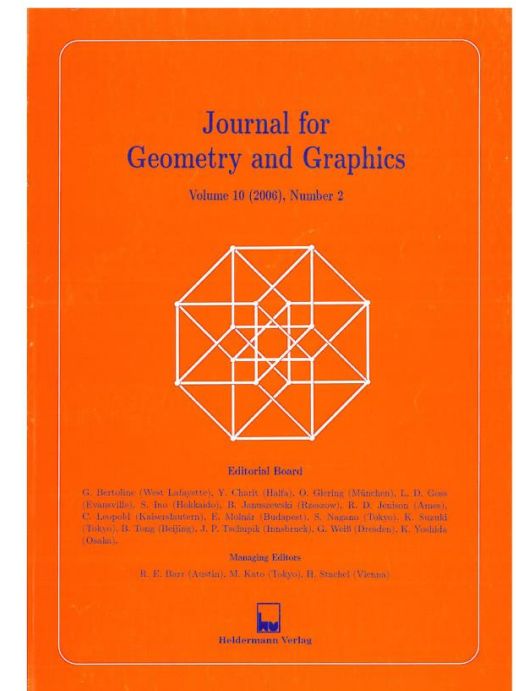




## In-Between ...

In 1997 the first item of the *Journal for Geometry and Graphics*, the official review of our Society, appeared, founded by Hellmuth Stachel, his Editor in Chief until 2021 and now Honorary Editor, with Hans-Peter Schröcker as its current Managing Editor.

<https://www.heldermann.de/JGG/jggcover.htm>



## In-Between ...

In 1997 the first item of the *Journal for Geometry and Graphics*, the official review of our Society, appeared, founded by Hellmuth Stachel, his Editor in Chief until 2021 and now Honorary Editor, with Hans-Peter Schröcker as its current Managing Editor.



n. 26/1 2022

Special issue dedicated to Hellmuth Stachel

## 8th International Conference on Engineering Design Graphics and Descriptive Geometry (still ICECGDG) [ ICEDGDG ]

Austin 1998 (my first attendance! : )) )

Slight changes in the title (but not in the official acronym), where the word «Design» replaces «Computer», as a significant follow up from the previous meeting

Conference Topics were three only: Theoretical Graphics and Applied Geometry, Engineering Computer Graphics, Graphics Education

However in the final program plenty of sub-topics appeared, namely:

*Theoretical Graphics and Applied Geometry* included Theoretical Graphics and Applied Geometry (I, II, III, IV, V), Applications of Geometry and Graphics in Architecture, Applications of Geometry and Graphics in Natural Sciences, Applications of Geometry and Graphics in Art, Applications of Graphics and Geometry in Engineering (I, II) as sub-topics, *Engineering Computer Graphics* included Computer Graphics: Computational Geometry, Topics in Computer Graphics, Computer Graphics: Geometric Modeling, Computer Graphics: Modeling and Rendering, Computer Graphics: Modeling and Animation, Computer Graphics: Rendering and Visualization, Computer Graphics in Biology and Medicine, Computer Graphics for Computer Aided Design, *Graphics Education* included Training and Evaluation for Spatial Abilities (I, II, III), Multimedia in Graphics Education (I, II), Extension of Engineering Graphics to Design and Analysis, Computer Aided Instruction in Graphics Education, Teaching Techniques in Graphics Education, Computer Aided Design Teaching Techniques, Graphics Education issues (I, II), and *Other Topics* included Other Topics: History/Design Education, while the sub-topic Education Issues, Computer Graphics, CAD, was either in *Engineering Computer Graphics* either in *Graphics Education*.



The rich and articulated series of submissions on various topics worked as an efficient «incubator» for the future Conferences

A thriving array of contributions proposed investigations from several fields, including Geometry and Nature, new applications in Medicine Imaging, Architecture, Visual Arts, and Music

This suggests to include another «gem» in the series, that is, the plenary forum on *The Taxonomy of Geometry and Graphics*, conducted by Ronald Barr, whose report would have been published on the Journal for Geometry and Graphics

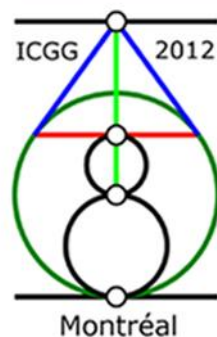
At the end of the Millennium, this Conference ideally concluded the first twenty-year cycle, being characterized by a fervent search for a position of Geometry and Graphics in the changing world under the impact of the Digital.

**Reflections on «Visual Sciences» as an emerging discipline**

*G. Bertoline*



# MATURE AGE (since 2000)



## 9th International Conference on Geometry and Graphics – 9th ICGG

Johannesburg 2000

The Conference took on its current name, in line with the Society and the Journal, with *Geometry & Graphics* at the core, giving start to the «mature age» of the meeting series

Topics were: Theoretical Graphics, Engineering Computer Graphics, Graphics Education, Other Topics of Interest

Several relevant contributions focused on the paradigm-shift occurring at the beginning of the Third Millennium in the field of Geometry and Graphics

**On the role of Universities in the emerging «visual world» - A. Folkesson**

**On Four-dimensional Geometry and Graphics Education (1950 to 2000) – S.M. Slaby & C.E.S. Lindgren**

**On *distance-learning* in Engineering Education – M.R. Moustafa**

**On *ethics of education* in the field of Design - S. Hirano, I. Sakamoto**



## 10th International Conference on Geometry and Graphics – 10th ICGG

Kyiv 2002

Topics were: Theoretical Graphics, Applied Geometry, Graphics Education and Computer Technologies

V.Y. Mykhailenko and G.S. Ivanov presented state of art and perspectives of Applied Geometry in Ukraine and Russia

G. Weiss remarked the importance of Conferences, that will never come to be superfluous

Reflections and discussion on *Pure Geometry, Applied Geometry, and Geometry and Graphics education* as the essential columns of Geometry and Graphics, and on the contribution of the meetings in promoting not only scientific exchanges, but also peaceful co-operation and friendship

*G. Weiss*



## 11th International Conference on Geometry and Graphics – 11th ICGG

Guangzhou 2004

Conference Topics: Theoretical Graphics, Graphics Education, Application Graphics, with no specific reference to the technologies used, which was an advancement in our field

Z. Zhuo presented the state of Engineering Graphics in China, remarking the changes occurred from airmail to email communication in the fields of Design, Manufacturing, and Theory, and the role of the visual approach in this process

Proceedings offer the overall impression of a finally safe and stable navigation of ICGG through the sea of Geometry and Graphics

**Dissertation on the connections between *Mathematical Geometry* and *Engineering Geometry*, as species of pure and applied Geometry in Engineering Education**

*G. Weiss*





## 12th International Conference on Geometry and Graphics – 12th ICGG

Salvador, Bahia-Brazil 2006

Same topics as in 2004, but papers also offer insights on: Rapid prototyping, Transformations in space and images, Historical retrospects on Geometry and Graphics, Information systems for Urban Studies and Planning, Infrastructure Design, and reflections on the connections between CAD and databases, what we nowadays call BIM (and GIS)

Proceedings for the first time on CD-Rom only

**Retrospect and dissertation on Four-dimensional Geometry in Research and Education**

*C.E.S. Lindgren*

**Reflections on Geometry and Graphics in spatial invention among mind, hand, and digital means**

*L. Cocchiarella*

**Heartfelt invitation to pursue *Engineering Conveyance* in the Digital Era**

*S. Hirano, I. Sakamoto, T. Araki*



## 13th International Conference on Geometry and Graphics – 13th ICGG

Dresden 2008

Topics: Applied Geometry and Graphics, Engineering Computer Graphics, Geometry and Art, Graphics Education, Theoretical Graphics and Geometry

Introduction with Classic music performance

Welcome addresses from the Saxon State Ministry for Science and Art, and the Deputy-Major of the city of Dresden

Dedication to the Saxon genius Ehrenfried Walter von Tschirnhaus (1651-1708)

Permanent exhibition *Good Vibrations-Geometry and Art*

Commemoration of Steve M. Slaby

The conference showed scientific ferment in various directions, well represented in the Keynote Speeches



On the *Holodiagrams*, and particularly conical sections in holography, interferometry, light-in-flight recordings, and relativity items

*N.H. Abramson*

Role of *Virtual Reality* in testing spatial abilities and rehabilitation paths

*H. Kaufmann*

Free-hand 3D drawing by as digital *Sketch Interpreter*

*K. Kondo*

Report and reflections about *Teaching at distance* in Graphics Education

*T. Branoff*



## 14th International Conference on Geometry and Graphics – 14th ICGG

Kyoto 2010

Topics were confirmed, with plenty of sub-topics:

*Mechanics & Structure, Formative Design, Engineering Design, Architectural Design Education, Surfaces, Art, Materials and simulation, Spatial Ability, History of Graphics, Paintings, 3D Captured Data Processing, CAD/CG Education, Origami, Applied Geometry, Image Processing, Engineering Graphics Education, Surface Modeling, Architecture and Civil Engineering, Application Systems, CG, Motion/Curve Approximation, Animation, 2D Descriptive Geometry, Pattern & Image, 2D Application, CAD Education, Drawing/Projection, Visualization of Spatial Composition, Descriptive Geometry Education.*

A Poster session further showed novel research paths and new specialization fields related to Geometry and Graphics

T. Branoff well stated that «Graphics is truly an international language»

**Reflections on the use of digital data in the Conservation of Cultural Heritage – S. Yabuuchi**

**Reflections on the impact of BIM on Engineering – C. Cory**



## 15th International Conference on Geometry and Graphics – 15th ICGG

Montreal 2012

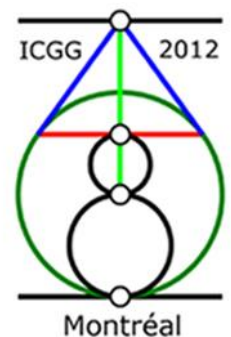
Topics listed in the *Brochure* were: Theoretical Geometry, Applied Geometry and Computational Graphics, Geometry in Education and Descriptive Geometry, Theoretical, Applied & Educational Geometry

Reduction and reassemblage of topics aimed at avoiding a «babel tower» effect

A Poster Session, and a *Permanent Display* of abstract and geometrical art by Y. Jeanson and Z. Waldheim were part of the Conference

Reflections on the diversity characterizing experts and on the increasing need of selfish overspecialization, including the risky effect of «jargons» which, preventing easy share and growth of knowledge, may provide the descent into a new «dark age»

*P. Zsombor-Murray*



**Quoting Peter Galison about the «instability of image» in the scientific representation of nature, opening the way to epistemological reflections**

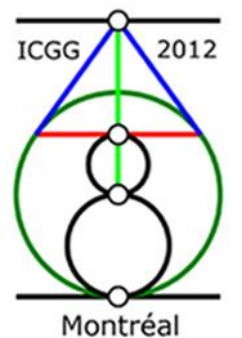
*A. Sprecher*

**Report and discussion on the evaluation of spatial imagination ability in text reading, and interesting cross-language test, relevant for a semantic approach to Geometry and Graphic representation in the digital era**

*H. Abe, M. Hamano, and M. Fikui*

**Impressive presentation concerning the use of the digital in the completion of the *Sagrada Familia* by Antoni Gaudí in Barcelona, from concept to construction**

*M. Burry*



## 16th International Conference on Geometry and Graphics – 16th ICGG

Innsbruck 2014

Topics are listed in the Book of Abstracts, including rich series of sub-topics picturing our field: *Theoretical Graphics and Geometry* has Theoretical Graphics, Geometry of Curves and Surfaces, Kinematic Geometry, Descriptive Geometry, Computer Aided Geometry as sub-topics. *Applied Geometry and Graphics* has Theoretical Aspects of Geometry, Modeling of Objects, Phenomena and Processes, Application of Geometry in Ars, Sciences, Architecture and Engineering, Geometri Aspects of Technical Art and Design, Computer Animation and Games. *Engineering Computer Graphics* includes Computer Aided Design and Drafting, Computational Geometry, Geometric and Solid Modeling, Product Modeling, Image Synthesis, Pattern Recognition, Digital Image Processing, Graphics Standards, Scientific and Technical Visualization. Finally, *Graphics Education* includes Education of Descriptive Geometry and Graphics, Education Technology Research, Multimedia Educational Software Development, E-learning, Virtual Reality, Educational Systems, Educational Software Development Tool.

A Poster session is also mentioned in the Book of Abstracts

**Live presentation as essential to give a deeper impression of author's ideas, considerations, experience and argumentation - O. Roeschel**

**UID – The Unione Italiana Disegno, became an Institutional Member of ISGG - O. Roeschel (President of ISGG), V. Cardone (President of UID)**



## 17th International Conference on Geometry and Graphics – 17th ICGG

Beijing 2016

Same Topics as in 2014

O. Roeschel emphasizes the increasing number of experts from all over the world working in the broad field of Geometry and Graphics

The Conference offered a relevant overview about Geometry and Graphics in Asia

The Board started talking about the possibility to host the next Conference in Italy

A retrospect on the history of the Conference series had start with a plenary lecture of Frank Maxfield Croft, titled *The History of The International Conference on Geometry and Graphics – One's Person's Reflection*, with a special focus on the period until 1992 and 1994, when ISGG and ISGG Bylaws were established, and the first ISGG Board was elected.

*F.M. Croft*





## 18th International Conference on Geometry and Graphics – 18th ICGG

Milano 2018

Classic Topics were: Theoretical Graphics and Geometry, Applied Geometry and Graphics, Engineering Computer Graphics, Graphics Education, and a new one titled Geometry and Graphics in History, including Concept of Space and Geometry, Development of Geometry and Graphics, Treatises and Manuals, Masters and Pioneers as sub-topics were introduced.

Changes in the sub-topics also appeared:

Graphic Simulation in Urban and Territorial Studies, and Aspects of Geometry and Graphics in Life Sciences as part of *Applied Geometry and Graphics*, while MOOCs and Emerging Classics was added to *Graphics Education*, and Virtual Reality was separated from Educational System.

Proceedings were now published by Springer and indexed as SCOPUS records

Conference included a dedication to Leonardo Da Vinci and Giulio Natta, as synthesized in the Conference Logo

The last part of the Proceedings include the Posters

Last meeting face-to-face up to now, it closes the second twenty-years cycle of ICGGs



**A retrospect on Geometry and Graphics in some Engineering inventions of Leonardo Da Vinci**

*M. Landrus*

**Insights on the relations between «Molecular Geometry» and «Molecular Graphics», from Natta's work on**

*G. Raos*

**Dissertation and work presentation about Designing with Shadows in Architectural Lighting Design**

*K. Mende*

**Exhibition: 40 Years of Geometry and Graphics, celebrating the 40th Anniversary from the Conference in 1978, with historical notes by H. Stachel and F.M. Croft**

*L. Cocchiarella, G. Mele, ICGG2024 Organizing Team*









The screenshot shows the website for the 18th International Conference on Geometry and Graphics (ICGG 2018) held at Politecnico di Milano from August 3-7, 2018. The page features a yellow background with a geometric pattern. The navigation menu includes: HOME, PROGRAM, CALL FOR PAPERS, SOCIAL EVENTS, VENUE & TRAVEL, SPONSOR, DEDICATION & LOGO, COMMITTEES, SUBMISSION, IMPORTANT DATES, REGISTRATION, and CONTACT. The main heading reads "The 18th International Conference on Geometry and Graphics" followed by "Politecnico di Milano" and "3 - 7 August 2018". It also marks the "40th ANNIVERSARY" of the conference. A "CONFERENCE CLOSED" notice is present, along with a "DOWNLOAD BELOW" section listing links for "Conference picture", "Conference Photogallery", "40 Years Geometry and Graphics", and "Play with the Logo".

[www.icgg2018.polimi.it](http://www.icgg2018.polimi.it)

(accessible until December 2024)



# VIRTUAL BREAK (ICGG 2020/21 & ICGG 2022)

The 19th and the 20th International Conferences on Geometry and Graphics – São Paulo (online)



## 19th ICGG - 2020/2021

Topics were confirmed, as sign of stability in our disciplinary field

As for sub-topics, Building Information modeling (2020/21) and Data Engineering (2022), were included in Engineering Computer Graphics

The 19th meeting, expected in August 2020, took unusually place in January 2021, and the Brazilian team assured a smooth transition in the accomplishment of the mission during the pandemic, as remarked by Hellmuth Stachel, the new proclaimed Honorary President of ISGG

Presentations wer video-recorded and uploaded in advance, and the Conference time was used for the discussion, in order to encourage «human» participation

No plenary sessions were included, and the time schedule was arranged taking into account the Time Zones of all the participants from the various countries of the world

This Conference was an efficient «direct test» about the potentialities of distance learning and working.



## 20th ICGG - 2022

The scientific contributions submitted confirmed Geometry and Graphics as the «bedrock» of many research field, as the Executive Chairman Lyang-Yee Cheng stated

To consolidate this bedrock, the *First Meeting with the Institutional Members and Associated National Organizations of ISGG* (IM & ANO Meeting) was organized, to share opinions on how to foster international cooperation on Research and Education in the field of Geometry and Graphics worldwide, which was video-recorded and it is still available on the Conference website

Plenary lectures were planned again

**Insights and discussion on the sustainability of Additive Manufacturing by appropriately bridging Computational Design and Digital Fabrication**

*B. Dillenburger*

**Insights and discussion on the impact of the new technologies on Digital Education**

*G. Celani*





*Quizzes on ISGG with awards, Kumihimo JHSP Exhibition on Japanese silk braiding, and a Virtual Tour of São Paulo, contributed to remind the feeling of a face-to-face Programme in this online Conference, making it unforgettable, as one can still see looking at video and records on the website*

Collateral events in this second online conference were:

\_The celebration of the *30th Anniversary of ISGG* and ideas for setting the future ISGG Agenda

\_The celebration of the *100th Anniversary of Steve M. Slaby's birth*

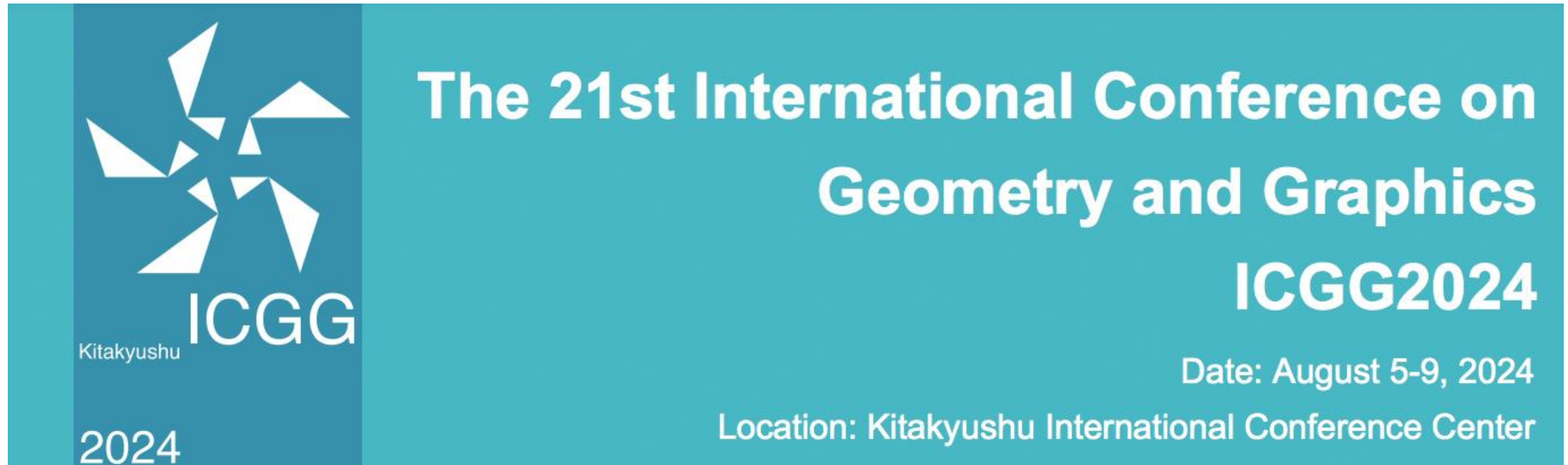
\_The establishment of *The Loyal Friends of ISGGs' Award*, given to Frank Maxfield Croft (left) and Paul Zsombor-Murray (right), as «loyal» participants since the first meeting in 1978



\_The commemoration of C. Ernesto S. Lindgren



# BACK TO NORMALITY AND WISHES

A banner for the 21st International Conference on Geometry and Graphics (ICGG 2024). The banner is split into two sections. The left section is dark blue and contains the ICGG logo (a stylized star shape), the text 'ICGG', 'Kitakyushu', and '2024'. The right section is a lighter blue and contains the text 'The 21st International Conference on Geometry and Graphics', 'ICGG2024', 'Date: August 5-9, 2024', and 'Location: Kitakyushu International Conference Center'.

Among the novelties, perhaps in the age of Computer Graphics the thunderous impact of Artificial Intelligence may open new research lines, and stimulate the submission of new scientific contributions, either to our Conferences either to our Journal, as did the thunderous impact of Computer Graphics in the age of Descriptive Geometry, during and after - and thanks to - the first inaugural Conference.

# NOTE

Given the high number of the Proceedings published, it would have been impossible to offer an exhaustive overview of the permanent renovations of the Conference in the forty-four years considered.

Therefore, either the narrative point of view and responsibilities, or omissions, are to be attributed solely to me.

My hope is that this story will be continued, and that the many related details could be better explored and investigated in the future, since in these profound roots lies a relevant part of the basis for our permanent renewal.

# ACKNOWLEDGMENTS

The archive of *Proceedings* inherited from ICGGs included more than thirty volumes in 2022.

Preserving hardcopies and high-quality softcopies of it, as well as encouraging its diffusion according to the publishers' regulations, is clearly part of the mission of ISGG.

My acknowledgments go to the colleagues who kindly shared with me these documents in occasion of the celebrations of the 40th Anniversary of ICGG, during the ICGG held in Milano in 2018, and after.

They are:

*Hans-Peter Schröcker*, who provided me with the Proceedings of the 1st and 3rd Conferences

*Ted Branoff*, for the Proceedings from 2nd to 5th, and from 7th to 10th Conference

*Yasushi Yamaguchi*, for the Proceedings of 6th and 14th Conference

*Cheng Liang-Yee*, for the Proceedings of 11th, 19th, and 20th Conference.

Proceedings of 8th and 10th, and of 12th to 20th Conference are also part of my personal archive.

Special thanks to *Mrs. Sarah Pye* for the proofreading of the paper, net my typos (!).

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Thanks  
for your kind attention  
&  
ENJOY ICGG2024!

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