The 16th International Conference on Virtual Learning
VIRTUAL LEARNING – VIRTUAL REALITY

Radu Jugureanu • Grigore Albeanu • Dorin Mircea Popovici
Olimpius Istrate •Adrian Adăscăliței
Editors

ICVL - 2021

Proceedings of the 16th International Conference on Virtual Learning

November 20, 2021
Bucharest, Romania

http://icvl.eu

Editors:
Radu Jugureanu, ROSE Project
Grigore Albeanu, "Spiru Haret" University
Dorin Mircea Popovici, "Ovidius" University of Constanta
Olimpius Istrate, Bucharest University
Adrian Adăscăliței, "Gheorghe Asachi" Technical University

ISSN: 1844-8933

Notice!

All papers were presented during conference according to the schedule.
All papers were checked for plagiarism.
However, there is no perfect software to certify "free of plagiarism".
All papers were reviewed for scientific value and relevance.
The responsibility for the results presented in this book is assumed by authors.

Contents

About ICVL 2021

ICVL Project intends to explore and propose innovations in education in the perspective of the Knowledge Society. The International Conference on Virtual Learning contributes to the development of both theory and practice in the field of Virtual Learning having the following objectives: creating a framework for a large scale introduction of the eLearning approaches in teaching and training activities; assisting the teachers, professors and trainers in the use of innovative teaching technologies both in formal education and life-long learning; stimulating the development of eLearning projects and software for education process and systems; promoting and developing scientific research for eLearning, educational software and virtual reality.

Participation is invited from researchers, teachers, trainers, educational authorities, learners, practitioners, employers, trade unions, and private sector actors and IT industry.

The ICVL committee accepts academically robust papers, topical articles and case studies that contribute to Virtual Environments for Education and Training (VEE&T), Virtual Reality (VR), Computer Vision (CV), Information and Knowledge Processing (I&KP), and presenting, as well, practical results and original applications. The education category includes:

- The use of Web Technologies, Computer Graphics and Virtual Reality / Augmented Reality Applications;
- New tools, methods, pedagogy and psychology;
- Case studies of Web Technologies and Streaming Multimedia Applications in Education;
- Experience in preparation of courseware;
- Design and Development of Massive Open Online Courses (MOOCs).

The main sections and related topics are (http://c3.icvl.eu/):

- **Models & Methodologies (M&M):** Innovative Teaching and Learning Technologies; Web-based Methods and Tools in Traditional, Online Education and Training; Collaborative Virtual Learning, E-Pedagogy; Design and Development of Online Courseware; Information and Knowledge Processing; Knowledge Representation and Ontologism; Cognitive Modelling and Intelligent systems; Algorithms and Programming for Modelling.

- **Technologies & Virtual Laboratory (TECH):** Innovative VR and Web-based Teaching and Learning Technologies; Advanced Distributed Learning (ADL) technologies; Web, Virtual Reality/AR and mixed technologies; Web-based Education (WBE), Web-based Training (WBT); New technologies for e-Learning, e-Training and e-Skills / e-Competences; Educational Technology, Web-Lecturing Technology; Mobile E-Learning, Communication Technology Applications; Computer Graphics and Computational Geometry. Intelligent Virtual Environments.

- **Software Solutions (SOFT):** New software environments for education & training; Software and management for education; Virtual Reality Applications in Web-based Education; Computer Graphics, Web, VR/AR and mixed-based applications for education & training, business, medicine, industry and other sciences; Multi-agent Technology Applications in WBE and WBT; Streaming Multimedia Applications in Learning; Scientific Web-based Laboratories and Virtual Labs; Software Computing in Virtual Reality and Artificial Intelligence; Avatars and Intelligent Agents.

- **Intel® Education - Innovation in education and research (IntelEdu):** Digital Curriculum, collaborative rich-media applications, student software, teacher software; Improved Learning Methods, interactive and collaborative methods to help teachers incorporate technology into their lesson plans and enable students to learn anytime, anywhere; Professional Development, readily available training to help teachers acquire the necessary ICT skills; Connectivity and Technology, group projects and improve communication among teachers, students, parents and administrators.

From the first edition in 2006, ICVL has published 15 volumes (one volume per year), and awarded 13 papers, as shown in the following table (http://c3.icvl.eu/).

Order Number	ICVL edition	ICVL Location	Received papers	Published papers	Awarded papers
1	2006	Bucharest	55	34	--
2	2007	Constantza	45	35	2
3	2008	Constantza	64	44	2
4	2009	Iassy	103	52	2
5	2010	Targu-Mures	134	78	2
6	2011	Cluj-Napoca	145	85	--
7	2012	Brasov	146	67	3
8	2013	Bucharest	104	55	2
9	2014	Bucharest	155	70	--
10	2015	Timisoara	121	69	--
11	2016	Craiova	101	55	--
12	2017	Sibiu	116	74	--
13	2018	Alba iulia	124	82	--
14	2019	Bucharest	144	87	--
15	2020	Bucharest-ONLINE	123	77	--

The 2021 edition of ICVL was planned for October 30, 2021. However, the death of the leader of the ICVL Project, associate professor **Dr. Marin Vlada**, in the last decade of September 2021, led to the postponement of the event for November 20, 2021.

Organized on this day, in two parallel sections, all 28 articles accepted by the program committee have been presented online using the ZOOM platform. This volume contains all these works in the final version for publication after their improvement by the authors following the recommendations submitted by scientific reviewers. Some articles were directly rejected either because of plagiarism, or because of poor contributions to one of the conference's topics, or because of the inappropriate subject for the ICVL.

Acknowledgements

First, our thoughts go to **Marin Vlada**, the initiator of the ICVL project, who, year after year, managed not only the electronic platform of the project, but also the coordination of all tasks necessary for the conference, almost every time, in another city in Romania. In parallel with the ICVL, the National Conference on Virtual Education (CNIV) was held with the large participation of teachers and students from the pre-university environment in Romania. Marin Vlada thought of the ICVL and CNIV projects as high-profile events that would bring added value in the field of learning with the help of modern technologies.

The success of a rigorously conference asks for strong efforts of many parties like chairs, reviewers, and contributors. Fair and detailed feedback was sent to authors by the Technical Program Committee based on reviewers' recommendations. Despite the time pressure imposed by the new conference deadlines, authors did their best to supply camera ready version in time before the conference. Finally, the volume has been processed according to the ICVL standards.

We are extremely grateful for efforts of all mentioned parties. Below, the lists of Chairs, Scientific committee/Technical Program Committee/Reviewers and Contributors are given.

Chairs

General Chair:

Radu Jugureanu

Technical Program Chair:

Grigore Albeanu

General Chair Associates:

Dorin Mircea Popovici,

Olimpius Istrate,

Adrian Adăscăliței

Scientific Committee/Technical Program Committee/ Executive Reviewers

Dr. Adrian **ADASCALITEI,** *"Gheorghe Asachi" Technical University of Iasi*,
Faculty of Electrical Engineering, Romania

Dr. Grigore **ALBEANU,** *"Spiru Haret" University*,
Scientific Research Center in Mathematics and Computer Science,
Bucharest, Romania
Dr. Robert **BELOIU,** *University of Pitesti*,
Faculty of Electronics, Communications and Computers, Pitesti, Romania
Dr. Natalia **BURLACU,** *Technical University of Moldova*,
Faculty of Computers, Informatics and Microelectronics,
Chișinău, Rep. Moldova
Dr. Snejana **DINEVA,** *Trakia University*, Faculty of Technics and Technologies, Yambol, Bulgaria

Dr. Gabriela **GROSSECK,** *West University of Timisoara*, Romania

Dr. Carmen **HOLOTESCU,** *"Ioan Slavici" University of Timișoara*,
Faculty of Engineering, Timișoara, Romania
Dr. Angela **IONITA,** *Research Institute for Artificial Intelligence "Mihai Draganescu"*,
Romanian Academy, Romania
Dr. Olimpius **ISTRATE,** *University of Bucharest*, Teacher Training Department, Bucharest, Romania

Prof. Radu **JUGUREANU,** *ROSE (Romania Secondary Education) - Project*, Team Leader

Dr. Gabriela **MOISE,** *Petroleum-Gas University of Ploiesti*,
Faculty of Letters and Sciences, Ploiesti, Romania

Dr. Mihaela **OPREA,** Petroleum-Gas University of Ploiesti,
Department of Automatic Control, Computers and Electronics, Ploiesti, Romania

Dr. Tanya **PEHLIVANOVA,** *Trakia University - Stara Zagora*, Faculty of Technics and Technologies, Yambol, Bulgaria
Dr. Mircea-Dorin **POPOVICI,** *„Ovidius" University of Constanta*,
Department of Mathematics and Computer Science, Romania
Dr. Radu **RĂDESCU,** *University POLITEHNICA of Bucharest*,
Faculty of Electronics, Telecommunications and Information Technology, Applied Electronics and Information Engineering Department, Bucharest, Romania
Dr. Alexandru **TUGUI,** *"Alexandru Ioan Cuza" University,*
Faculty of Economy and Business Administration, Iași, Romania
Dr. Zlatin **ZLATEV,** *Trakia University*, Faculty of Technics and Technologies, Yambol, Bulgaria

Contributors

Antoaneta Dimitrova, *Trakia University*, Bulgaria
Avadanei Manuela-Lacramioara, *"Gheorghe Asachi" Technical University*, Iași, Romania
Barna Valentin, *University of Bucharest*, Romania
Berlic Catalin, *University of Bucharest*, Romania
Bogdan Mihai, *"Lucian Blaga" University of Sibiu*, Romania
Burlacu Natalia, *Technical University of Moldova*, Chișinău, Rep. Moldova
Burlan Bogdan, *Petroleum-Gas University of Ploiesti*, Romania
Cernicova-Buca Mariana, *Politehnica University of Timișoara*, Romania
Chiriacescu Bogdan, *University of Bucharest*, Romania
Chiriacescu Fabiola-Sanda, *University of Bucharest*, Romania
Colt Marilena, *University of Bucharest*, Romania
Costache Daniel, *University of Bucharest*, Romania
Crăciunoiu Alexandra, *Tremend Software Consulting*
Curteza Antonela, *"Gheorghe Asachi" Technical University*, Iași, Romania
Dineva Snejana, *Trakia University*, Bulgaria
Dinu Ion Georgian, *Petroleum-Gas University of Ploiesti*, Romania
Dragomir Florentina Loredana, *Carol I National Defence University*, Romania
Dragomir Marilena-Cătălina, *Polytechnic University of Bucharest*, Romania
Dumitru Victor-Tiberiu, *University of Bucharest*, Romania
Fartușnic Ciprian, *National Centre for Educational Policies and Evaluation*, Romania
Gherheș Vasile, *Politehnica University of Timișoara*, Romania
Istrate Olimpius, *University of Bucharest*, Romania
Katerina Despot, *Goce Delchev University*, Stip, R. N. Macedonia
Krum Videnov, *Trakia University*, Bulgaria
Labăr Adrian, *Alexandru Ioan Cuza University*, Iași, Romania
Lotrean Elena, *Finnish Teacher Training Centre*, Sibiu, Romania
Marta Kosturska, *Goce Delchev University*, Stip, R. N. Macedonia
Mihai Aura, *"Gheorghe Asachi" Technical University*, Iași, Romania
Mihăilescu Luca, *University of Bucharest*, Romania
Miron Cristina, *University of Bucharest*, Romania
Miroslav Vasilev, *Trakia University*, Bulgaria
Morcov Stefan, *Tremend Benelux, Katholieke Universiteit Leuven*, Belgium
Moșoiu Oana, *University of Bucharest*, Romania
Nedeva Veselina, *Trakia University*, Bulgaria
Oprea Mihaela, *Petroleum-Gas University of Ploiesti*, Romania
Opriș Edina-Timea, *Babes-Bolyai University*, Romania
Popescu Eleonora, *University of Bucharest*, Romania
Popescu Mihai, "*Ion Luca Caragiale" National College*, Ploiesti, Romania
Pupezescu Valentin, *Polytechnic University of Bucharest*, Romania
Seul Arina, *"Gheorghe Asachi" Technical University*, Iași, Romania
Silviya Dechkova, *Technical University of Sofia*, Bulgaria

Learning of the Space as an Accent in the Living Rooms

Katerina Despot[1], Silviya Dechkova[2], Vaska Sandeva[1]

(1)Goce Delchev University, Stip, R. N. Macedonia,
Department of Architecture and Design
(2) Technical University of Sofia,
Faculty and College, Sliven, Bulgaria
E-mail: si_yana@abv.bg

Abstract

The emphasis in space as the basic phonological pillar in the expression is based on the system of design laws that govern the emphasis. "One thought is only so deep and how much power it propagates with itself". Emphasis is the most important thought in conceiving the aesthetics of design and is in a law-proportionate relationship with the ontological-axiological aspects of design. It can be sought in many different ways and different aspects of looking at the emphasis in design processes. For example, is a process better than another, which is a "true" and "wrong" way of designing? Why are some processes advantageous to others? Do different processes lead to different qualities of the results? This view of viewing is based on the individualism of users who are part of spacious living. The proposed methods and tools can be used as a basis for creation of methods and methodologies in design education. Also, in the training of future interior design specialists.

Keywords: space, design, concept, accent

1 Introduction

In the last few decades, significant research is devoted to developing design theories with the ultimate goal of clarifying the human ability to design in a scientific way, and at the same time producing practical knowledge of the methodology of design (Indrie et al., 2017). It is believed that such knowledge is useful and essential for building a design that the designer himself is not sufficient to create the design. Many factors additionally affect the designer, i.e. the users, the technique and the technology, and the passion for art.

The space is a reality in which we live and in which we move. We experience it through 3 dimensions: width, length and height, but also through certain moments in a certain trend, which can add time as a 4 dimension in space. Albert Einstein adds physical space – time as an inseparable notion (Quarante, 1984).

The emphasis in space as the basic phonological pillar in the expression is based on the system of design laws that govern the emphasis. "One thought is only so deep and how much power it propagates with itself". Emphasis is the most important thought in conceiving the aesthetics of design and is in a law-proportionate relationship with the

ontological-axiological aspects of design (Karapetkov et al., 2002; Kandinski, 2016). It can be sought in many different ways and different aspects of looking at the emphasis in design processes. For example, is a process better than another, which is a "true" and "wrong" way of designing? Why are some processes advantageous to others? Do different processes lead to different qualities of the results? This view of viewing is based on the individualism of users who are part of spacious living.

2 Exposure

We call space between some of the shapes between spaces. By itself, we cannot experience the space, it is a gap between some forms that make up and shape it, so it is always connected with volume.

The space, although seemingly empty, inert, invisible resistance, to everyone is manageable, is essentially an active element in the design (Bogdanovic, 1991). He engages in artwork, he helps, but he can act the opposite if the required ratio between him and the object is not found, as shown on Figure 1. The real space creates the image of the viewer only that he approaches each individual.

Figure 1. The concept of space
(**https://www.kocsanmobilya.com/extreme-makam-takimi**)

Architecture is most closely related to the space, it is born from it, takes part of it, lives with and from it, together make a whole. Architecture is a space, but it itself divides the space with its purpose. The enclosed space - interior it feeds on from the complex compaction in which it has shapes - furniture without which the space would be empty and unfinished (Tambini, 1999; Pehlivanova, 2015). It limits the designer with its dimensions, but at the same time there are many requirements that need to be set up to be fulfilled.

The open space does not release, and with the creativity or the limitation of the mind it should be shaped and in many segments it should be brought to the polyurethane space that the designer assists and merges with functional and decorative forms.

All significant periods in history have given their types of spatial conception. They were also a reflection of the basic conditions of the civilizations they created (Ivanova, 1984). These types of spatial concepts appear in history as the same or as modified forms. During the duration of the understanding of a certain space, these types represent the norm for

human visions; manage the impression and the way in which it is viewed. The new concepts of space are bound up with great societal changes and usually initially encounter resistance (Figure 2), as long as the new concepts do not become new standards for perception.

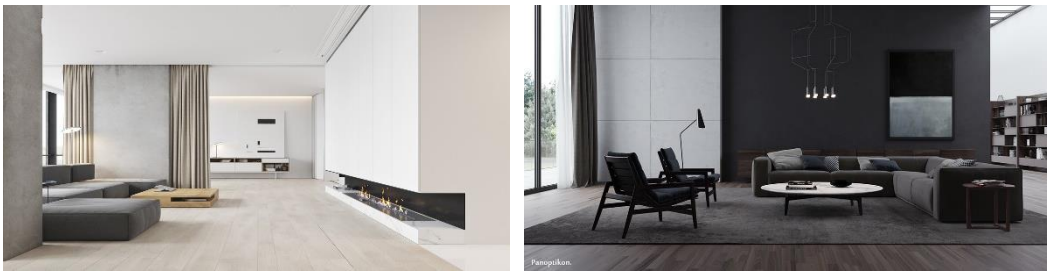

Figure 2. New concepts of space
(**https://dekormodelleri.com/siyah-salon-dekorasyonu/**)

Rapid changes supported by modern science and education have formed new perceptions of artistic perceptions (Zlatev et al., 2018). Today, the designer requires a way and a way of interpreting those conceptions that include and require new spatial dimensions. The limitations of this focused view, the designer developed a perspective and presented some distorted illusions in the real spaces as the human eye sees. In doing so, he had to exclude the moving and living aspects of nature. It is possible to penetrate into the internal and external structure of nature by using microscopes, cameras, telescopes (Ivanova, 1984; Uzunov, 2014). This led to a new view of the space; it became clear that the space cannot be viewed from one point. The main characteristic of this knowledge is the movement, and this has become the basis, regardless of whether it is a real movement or the creation of an illusion of movement. The movement has become part of the space, and this movement in space can be given only if the space component is included in the space, thus adding a new dimension to the spatial concept.

Thinking about the effect and its dimension does not lead us to the conclusion that the problem consists in the relationship, i.e. in their relativeness. It cannot be said that larger spaces have greater acceptance than the smaller ones, and vice versa. The initial information for a certain space depends on several factors: tone, color, shape, position, texture, etc. Because these factors are constant, we can always determine what the magnitude effect is in a given situation.

The accent can be shown in several ways. The repetition of various elements, creating an accent that attracts attention, for example, through vertical motifs (Haddad, 2014). If the combination of flowers binds, during the specified step, the place where those of the flowers are will attract attention. The use of dark gray and black colors gives a dynamic feeling to the room and is only a small part of the functional proposals for design and furnishing, for example, a studio.

High-tech dynamic solutions free up space in modern urban housing. The movable wall contains a hidden closet and a folding bed, and is the right design approach.

The use of the space in front of the door provides additional space and brings functionality and practicality. Mirrored surfaces give visual depth to the rooms and create the illusion of a much larger space.

The ceiling can be used as a main accent in the interior. This is done by hanging flowers or other decorative ornaments. Installation of non-standard lighting fixtures. The play with light creates a magical effect and perfectly visually separates the individual parts of the living room.

Wooden sliding doors give a finished look to the furniture, with elegant and simple motifs that will add a sense of space and style. Multifunctional furniture saves space and looks modern and innovative.

Glass partitions turn the living room into a design work and give organicity and purity to the interior. The wall of shelves will turn the living room into a highlight, but will also provide plenty of storage space for books, decorations, belongings. The modular furniture system is an ideal choice, as it saves a lot of space, but at the same time looks stylish.

The use of contrasting textures and colors for the floor and ceiling visually enlarges the space. Bold and accentuating colors for the furniture will turn the living room into a cozy and fresh place to live. Placing movable sections with bookshelves is an intelligent and modern solution for furniture in living rooms. If some of the cabinets have a glass display case, then on the front, you can display a plan of wine or champagne glasses or coffee cups with decoration. The built-in lighting in the cabinet will enhance the effect.

The furniture of the living room has its subtleties, for example, if the room does not allow the placement of tall and too bulky furniture. However, sometimes the key to a more harmonious atmosphere lies in creating a complete concept for the room. To make it look more spacious, it can be painted white, and the ceiling has been turned into a playful accent. The furniture is selected to complement the mood in the room, and the window can be placed enchanting curtain to create additional comfort.

Soft textile fabrics do not fully reflect the nuances of the colors used, but plush and velvet fabrics are very close to them. Upholstery in appropriate shades for the sofa or armchair will illuminate the room. If it is too intrusive, only a few decorative pillows with fringes and tassels in this color can be chosen. Shiny threads could be applied to the curtains and drapes.

Numerous decisions need to be taken so that each project can be completed within the deadline and budget. The training and work of the interior designer includes the determination of values of aesthetics, the cost of the materials used and the execution time. Restrictions may be based on budget, but there is no proper design, everything is judged, depending on the needs of the client.

Opening the volume, unity of shape and space – They contain an intermittent game of smooth, wide and clean bad, with the reliefs of multiple layered interventions and in the ultimate development will break away from the attractive world of nature, finding new solutions for their vision of life, stimulated from the constant fast pulse of everyday life (Dineva et al., 2011; Kandinski, 2016).

Looking at one such approach as an integral part of the space, which is an emphasis in the daily stay, opens many questions for discussion. Which marks the next, from 70 years of the last century to several years ago, the main day-to-day gatherings were the installation of the chi-commodity TV, with the advent of new technology and its strong expression, the accentuated part that TV had had already remained neglected, the change the habits and the fast way of life.

The development of the whole conceptual nucleus, which was called collecting, has already lost the power of domination. But leave questions that need to be answered, i.e. what is the New Accent in the Day Care? If we point to some retrospect in the history before TVs show an accent place, the place where there was a gathering place where it was placed in order to occupy the main view of the daily stay, very often as an elemental element were placed realistic sculptures that had the same goal as the fireplace, i.e. a place around which all members of the family were gathered.

Looking at the basic geometric shape, the up-to-date concept supported by the concentric lines that send the form in the given case does not make monotony, and directs the viewer to the central setup of the newly established priority, which has purely decorative rather than as a functional functional purpose.

In the geometric framework, there is compaction of dorsally-protruding infractions of horizontal, vertical or diagonally placed bad. The ravages of their movements vary depending on the position of the rhythmically designed notches in the convex-convex surfaces.

3 Conclusion

When considering the concept in learning of the Space as an Accent in the Living Rooms, we can draw the following conclusion: the space is the base from which we begin to distribute, analyze and solve all problems related to the interior design. The main gathering in the residential areas is the daily stay with all its specifics, but the loneliness of the new time has doubled that space in a so-called reception hall where there is no space for long-term use.

The best place to replace the TV in the minimalist spaces is an accentually placed luminous sculpture taken as an inspiration from the ancient period which will have an accentual place in the daily stay, that is, a form that would be the only topic for long-term conversations.

The opening of the visas breaks the dynamics in contemporary spaces the very form that is emphasized, supported by colorful elements that send the dominant form and provide a specific view. The proposed methods and tools can be used as a basis for creation of methods and methodologies in design education. And also, in the training of future specialists in the field of interior design.

4 References

Bogdanovic, K. (1991): *Teorija forme*. Students course, Beograd, Serbia. (in Serbian)

Dineva, S., Stoikova, V. (2011): Application of Interactive Devices and Virtual lab in Chemistry Learning. In *Proceedings of the 6th International conference on virtual learning* (ICVL), Romania, 261-267.

Haddad, R. (2014). Research and Methodology for Interior Designers. Procedia - Social and Behavioral Sciences, 122, 283-291.

Indrie, L, Kazlacheva, Z, Ilieva J., Gherghel, S. (2017): Embroidery-from digital designing to fine art. *Revista Industria Textilă*, 68, 5, 366-369.

Ivanova, N. (1984): *History of Design*. Science and Art Publishing House, Sofia, Bulgaria. (in Bulgarian)

Kandinski, V. (2016): *About the spiritual in art*. Translator from German: Nikola Georgiev, East-West Publishing House, Sofia, Bulgaria. (in Bulgarian)

Karapetkov, S., Kalitchin, Z., Uzunov, Hr. (2002): Comparative Evaluation of Vehicles' Stopping in The presence of Snow Cover of Three Groups of Motor Cars. *Proceedings of the 4-th International Conference on Tribology*, Turkey, 2, 557-566.

Pehlivanova, T. (2015): Methods for intensification of the training in technical subjects. *Applied researches in technics, technologies and education* (ARTTE), 3, 4, 344-349.

Quarante, D. (1984): *Osnove industrijskog dizajna, Arhitektonski fakultet Sveučilišta u Zagrebu*. Interfakultetski studij dizajna, Zagreb, Serbia. (in Serbian)

Tambini, M. (1999): *The look of the century – Design icons of the 20th century*. Dorling Kindersley Publishing House, London, UK.

Uzunov, Hr. (2014): Comparative analysis of impact test methods between vehicles. *Mechanics of Machines*, 108, 13-16. (in Bulgarian)

Zlatev, Z., Bayceva, S. (2018): Application of optical device in methodology for teaching analysis of essential oils. In *Proceedings of the 13th International Conference on Virtual learning* (ICVL 2018), Alba Iulla, Romania, 124-129.