A HISTORY OF THE INTERNATIONAL COLOR ASSOCIATION STUDY GROUP ON ENVIRONMENTAL COLOR DESIGN, FROM 1982 TO 2002

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Abstract: The AIC Study Group on Environmental Color Design was created during the Interim Meeting 1982 on Color Dynamics, in Hungary, and since that it has been active holding meetings at AIC congresses, making plans for research and achieving results in some aspects. Among the specific aims that have been proposed along the years there are: to collect a specialized bibliography, to arrange an annotated glossary on color and light in environmental design, to carry out surveys on preferences for color combinations, to make specific publications, to set up a web page and an e-mail list for communication. As a way of celebrating the twenty years from its creation, this paper makes a history of the activities of the study group and the persons involved in it, collecting and arranging information spread out in diverse media. In addition, because in the recent times there was an increasing number of new members that do not necessarily know the origins and history of the study group, this will be a means of providing them with background and contextual information about it.

Keywords: environmental color design, study group, AIC, history

INTRODUCTION

The Study Group on Environmental Color Design (ECD) of the International Color Association (AIC, Association Internationale de la Couleur) was created during the Interim Meeting on Color Dynamics, held in Budapest, Hungary, in 1982, and since that, it has been continuously active holding meetings at the AIC congresses, proposing aims for research and work to be done, and achieving results in some of these aspects.

Among the specific tasks that have been proposed along the twenty years of activity of the ECD Study Group there are: to collect a specialized bibliography, to arrange an annotated glossary on light and color in environmental design, to carry out surveys on preferences for color combinations, to make specific publications, to set up a web page and an e-mail list for discussion.

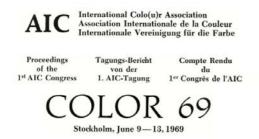
As a way of celebrating the twenty years from its creation, the aim of this paper is to make a history of the activities of the study group and the persons involved in it. Because in the recent times there was an increasing number of new members that do

not necessarily know the origins and history of the group, this will be a means of providing them with background and contextual information about it.

ANTECEDENTS ON E.C.D. WITHIN THE A.I.C.

The AIC was founded in 1967,¹ and in 1969 had its first congress. Let us make a survey of the AIC activities previous to 1982, which provided the background and contributed to the creation of the ECD Study Group. Along the different AIC congresses, there was an increasing participation of architects, designers and other specialists interested on color in the environment.

Already in the 1st AIC Congress in Stockholm, Sweden, topics related to environmental color design appeared in various papers, for instance, the ones presented by Anders Hård, on qualitative attributes of color perception, Antal Nemcsics, on man's color preferences along history, Bohdan Lisowski, on color preferences in architecture, Csaba Klausz, on color associations, Oliver Izsak, on color in decorative illumination, Gerald Ewing, on color theory applied to the three dimensional environment, Bernard Lassus, on visual complexity in the artificial environment [1].



In the 2nd AIC Congress, held in York, England, in 1973, one of the survey lectures was delivered by Faber Birren on "The practical application of light and colour to human environment". In the Proceedings, under the heading of "Colour Applications", appear the sessions of "Colour in Design", with papers by Lothar Gericke, Janusz Nowicki, and Sachie Minato, and "Colour in Architecture", with papers by Margaret Campbell, Edgar Witold Knoop, Chróscicki, Antal Nemcsics, C. Klausz, J. Wozniakowski, and Péter Gáborjáni [2].

In 1976 there was an AIC Interim Meeting on Color Dynamics held in Budapest, which was the first AIC meeting specifically devoted to subjects such as color in architecture, design, and the environment. This congress constituted the most direct antecedent, because the ECD was created during the 2nd congress on Color Dynamics, in 1982, as we will see.



In the 3rd AIC Congress, held in Troy, New York, in 1977, one of the eight invited lectures was about "Color in industrial design", by Sachie Minato. In addition, a whole session was devoted to "Color in art, design, and architecture", with papers by Faber Birren, W. D. Cox, Shigenobu Kobayashi, M. Yamagishi & Y. Mori, S. Kobayashi & K. Sato, Werner Spillmann, Erdal Aksugür, T. Whitfield & T. Wiltshire, and Albert Garrett [3, 4].

Even at the AIC Midterm Meeting in Kyoto, 1979, which was on the specific subject of Color Appearance, already in the previous circular and tentative program [5] there appear papers by Antal Nemcsics, Anders Hård, and Lars Sivik, the three most important people that will be involved in the creation of the ECD Study Group a few years later.

During the 4th AIC Congress, held in Berlin, in 1981, there was a session on "Psychology and Design", with papers by T. Iijima & others, J. B. den Tandt, T. Whitfield & T. Wiltshire, Frans Gerritsen, B. Lisowski, H. Lang, F. Schmitt, and Michel Albert-Vanel. In addition, we can count various posters presented on topics related to environmental color design: T. Yanase & others, Paul Green-Armytage, J. Ruttenberg, A. Kodama & others, and Antal Nemcsics [6]. And here we come to the birth of the Study Group on Color Dynamics, whose name was later changed to Environmental Color Design. Let us review the details of its creation.



The 4th Congress of the Association Internationale de la Couleur

COLOR 81 BERLIN

Berlin (West), Germany September 20 — 25, 1981

THE BIRTH OF THE E.C.D. STUDY GROUP

During the first half of 1981, previously to the 4th AIC Congress in Berlin, the president of the Hungarian National Color Committee (HNCC), Antal Nemcsics, had proposed the creation of a new AIC study group on the subject of color dynamics. This proposal was acknowledged in the quadrennial report of the secretary/treasurer, written by Andreas Brockes in June 1981 [7], and sent together with the invitation to attend to the meeting of delegates that was going to take place on September 24, during the 4th AIC Congress in Berlin.

In an undated letter in response to Brockes' invitation (received by Brockes on September 16, 1981), Nemcsics gives some details about the preparation of the next AIC Interim Meeting on Color Dynamics 1982, to be held in Budapest, and proposes that "in the course of the Conference the HNCC wants to convene an international committee to found the Working Committee for Colour Dynamics of the AIC and to elaborate its task and program" [8].

Already in the 4th AIC Congress, held in Berlin on September 21-25, 1981, the AIC Executive Committee inaugurated activities of the study groups. In the meeting of the AIC delegates, September 24, it was decided that "the preparation for a study group on colour dynamics as proposed by Nemcsics in his letter have been approved by the AIC" [9]. The president's address delivered in this congress by C. James Bartleson reports on the activities of two study groups (Color Order Systems, and Color Education), and indicates that "a new study group for 'Colour Dynamics' has just been established", being the purpose of any

study group "to address color problems that are not considered within the frames of reference of other international organizations that deal with color and to disseminate information on these subjects to our members" [6, vol.1, p.4].

As it happens at every quadrennial congress of the AIC, that a new Executive Committee is elected for the next term, in Berlin 1981 Robert W. G. Hunt was elected as the president, Heinz Terstiege as the vice-president, and Johannes J. Vos as the secretary/treasurer for the 1982-1985 period (also, Anders Hård was elected as one of the four ordinary members).

The final configuration of the new study group was achieved during the AIC Interim Meeting on Color Dynamics (which was the second conference under this heading),³ held in Budapest during June 8-10, 1982.



SZÍNDINAMIKA '82 COLOUR DYNAMICS '82 DYNAMIQUE DES COULEURS '82 FARBENDYNAMIK '82

II. SZÍNDINAMINAI KONFERENCIA '82 CONFERENCE ON COLOUR DYNAMICS '82 CONFERENCE SUR LA DYNAMIQUE DES COULEURS '82 KONFERENZ FARDENDYNAMIN '82 R-10 6 1882

BUDAPEST

In the *Colour Dynamics '82 Bulletin* Nr. 1, sent in advance to the congress, it is stated that "the Hungarian Commission for Colour has the intention to call together an 'ad hoc' International Study Group on Colour Dynamics during the Conference and to work out the task and the program

of this board" [10]. The first proposed aims of the study group were also established in this *Bulletin*. The suggestion of the work to be done was:

- · Forming a uniform terminology for the concepts taken over from different domains of sciences and used now in the new science of Colour Dynamics;
- · Revelation of the connections between colour, man and environment;
- Description of the results revealed in order to make them applicable for planning;
- Survey and systematization of the research places and researchers, as well as results dealing with planning of definitely coloured environments; and
- · Tracing the possibility for exchange of experience among designers.



In the Budapest congress, a group of around 20 persons gathered together to discuss the proposal further, and there was a general agreement that the main goal of the study group should be "to study the effects that color in environmental design has on people". The first proposed name for the new study group, "Color Dynamics", was a subject of some discussion and objections. For instance, the AIC president Robert Hunt considered that

the expression "color dynamics" could be misunderstood as "colors in movement". Thus, the name was changed to "Environmental Color Design", because it was considered that it provides a more precise identification of the aims and scope of research.⁴

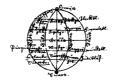
At this meeting, Anders Hård was elected to chair the study group, and the next step was to find people interested in becoming members from the different countries in which there were national organizations or AIC observers, a task that was taken over by J. J. Vos, the AIC secretary/treasurer [11]. In the months following the Budapest meeting, there was "a poor response to Dr Vos' appeal to member organisations to supply ... names of persons interested in taking part in this work". Hård and Sivik suggest that "the lack of a well-defined working program for the Study Group may have contributed to this lack of response" [12]. By the end of 1982 only three persons had been registered as ECD members. Thus, the beginning of the activities of the study group was delayed until the AIC Midterm Meeting that took place in Kungälv, Sweden, in August 1983, which was in fact the first meeting with the study group already constituted.



Antal Nemcsics

E.C.D. MEETINGS AND SESSIONS WITHIN A.I.C. CONGRESSES

The ECD Study Group held its first meeting under the chairmanship of Hård on August 29, 1983, at Kungälv, Sweden, immediately after the AIC Midterm Meeting. The meeting of the study group was attended by about 30 persons. Hård made an opening welcome, summarizing the immediate antecedents and original aims of the study group, and tracing the working program [13]:



THE FORSIUS SYMPOSIUM ON COLOUR ORDER SYSTEMS

August 25–29 1983 at NORDISKA FOLKHÖGSKOLAN KUNGÄLV near GOTHENBURG SWEDEN

- - in collaboration with
 - The Swedish Colour Group
 - Department of Psychology at
 the University of Götchers
 - SIS, The Swedish Standards Institution
 - The Scandinavian Colour Institute



MIDTERM MEETING 1983

- To study the terminology used by various people in describing environmental color
- To collect information and relevant data about color in the environment; what is known; what is believed; what are doctrines.
- · To consider for whom we are working and for which demands.
- · To collect a bibliography (What should it cover of knowledge, opinions, experience, hypothesis? Should it consist of just titles or be annotated?).
- To formulate ideas and initiate research
 —preferably on an international level.
- To study the evaluative aspects of color in the environment and try to relate these to possible origins such as: genetic, biological, ecological..., socio-

cultural, style, fashion, religion..., authoritarian dogmas, erratic statements derived from false analogies with other sciences (e.g. complementaries), uncontrolled "model-thinking".

After the introduction by the chairman, Lars Sivik was proposed and approved as the secretary of the study group. In the discussion that followed, the topic of color terminology and the question about having a common color language, by defining terms unambiguously, appeared among other questions. It was also stated that, besides color, the scope should include other aspects of appearance, such as gloss, texture, transparency, etc., and that another task of the group should be to collect color planning documents as examples of good or bad use of color in the environment.

By March 1984, Sivik and Hård sent a message to the AIC member organizations, containing an invitation to provide names and data of people interested in joining the ECD Study Group [12], and enclosing the minutes of the ECD meeting at Kungälv [13]. The *AIC Newsletter* 1, issued on April 1984, contains a brief statement about this ECD meeting at Kungälv.



Lars Sivik

On June 1985, at the 5th AIC Congress in Monte Carlo [14], the study group held another meeting, attended by about 30 persons. In that opportunity, the study group had 21 official members. In the *AIC*



Newsletter 3, August 1986, there is a summary of what happened in this meeting [15]. Hård presented a report covering the period 1982-1985, where he says that one of the originally proposed tasks, compilation of a bibliography environmental color design, had a weak response from the part of the members. The matter of the bibliography was discussed at some extent, and various participants made different proposals, including one by Werner Spillmann about contacting the Color Reference Library in London, which probably already had references arranged under the category of environmental design. In this way, the task of collecting a bibliography was excluded from the activities of the study group. Hård pointed out that some of the aims established for the study group in the previous meeting were not reached, and

suggested to name a new chairman and secretary, but the members agreed on that him and Sivik continue for a new term.

The Interim and Midterm AIC Meetings following the 5th Congress were devoted to Color in Computer Generated Displays (Toronto 1986) and Color Vision Models (Florence, Italy, 1987, organized by Lucia Ronchi); being too specific, they seem not to have attracted many members of the ECD Study Group. However, John Hutchings and Werner Spillmann, both members of the AIC Executive Committee and also members of the ECD Study Group, participated in those congresses, and Leo Oberascher appears in the list of attendants to the Florence meeting, as well.

But in 1988, the AIC Interim Meeting in Winterthur, Switzerland, organized by Werner Spillmann, was entirely devoted to "Color in Environmental Design", and was attended by architects, interior and industrial designers, color consultants, psychologists perception and researchers from 24 countries. With regard to the study groups, there were changes of chairpersons in the Study Groups on Color Order Systems and Color Education and, according to the minutes of secretary/treasurer J. Walraven, "the Study Group on Environmental Design, led by Mr. Hård, is striving with a diversity of opinions on its course" [16].

By the 6th AIC Congress 1989, held in Buenos Aires, the chairmanship of the ECD Study Group had already passed from Hård to Leo Oberascher. In a report of this congress, written by Green-Armytage [17], he points out that "the study group on environmental colour design has ambitious plans for promoting world wide research in an area where little work has been done". It is quite interesting to note that in this congress, the first invited plenary lecture,

which as a matter of fact had the characteristics of an opening lecture, was delivered by one of the most outstanding members of the ECD Study Group, Werner Spillmann, who talked about "Colour in architecture" [18]. It was the first time in an AIC quadrennial meeting that a topic on environmental color design occupied such a privileged position in the congress program [19, 20].

Under the chairmanship of Oberascher, a Newsletter of the ECD Study Group was produced at the end of 1989, and sent to more than 200 people. By 1990, the study group became an official member of the Coordination Group of Non Governmental Organizations in the field of Man-made Environment [21].



Leo Oberascher

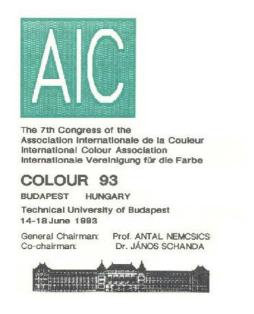
It is strange that at this same period, in September 1990, in a letter sent to the AIC president, Alan Robertson, and published in the AIC Newsletter 6, Theano F. Tosca considers that "the Environmental Study group is sinking". However, I understand that she does not refer to a lack of activity of the study group; instead, the reason she sees for that situation is the lack of understanding between the two main groups of the "scientists" and the "artists-

designers" within the AIC, which make interdisciplinary work only a mere wish.

At the AIC Midterm Meeting 1991 on Colour & Light, held in Sydney, there were three sessions devoted to color in the visual arts and architecture. This is a very good amount of time given to this topic if we consider that only 45 papers and 9 posters were presented at that conference in total.



In the Proceedings of the 7th AIC Congress, held in Budapest, June 13-18, 1993 [22, 23], Green-Armytage makes a synopsis of the round table discussion on environmental color design, including some ideas or contributions by Giovanni Brino, Christina Burton, José L. Caivano, Michel Cler, Shigenobu Kobayashi, Lars Sivik, and Magenta Yglesias [24].



In 1994, the AIC president Lucia Ronchi directed her attention to the activities of the different AIC study groups, detecting that the "speed" of their work was "inversely proportional to the extent of the matter they encompass" (as she says in the AIC Newsletter 9), and suggested to narrow the aims to more specific matters by means of the creation of goal-directed sub-groups. Within the ECD Study Group, a sub-group working on Terminology in Urban Design prepared by 1994 an annotated glossary on "Light and color in environmental design" to be distributed for comments [25].

From 1993 to 1996, Oberascher tried to make contacts with the publication *Farbe+Design* in order to see the possibility of including articles and material from the ECD members in that publication, but the efforts were finally unsuccessful.

By 1995, the AIC president's report by Lucia Ronchi, published in the *AIC Newsletter* 10, acknowledges a suggestion made by Green-Armytage about using the internet "to evaluate on a world-wide scale the definitions of specialist terms of interest that have been the outcomes of the activity of a subgroup of the Environmental Colour Design Study Group".

In 1996, at the AIC Interim Meeting on Color & Psychology, held in Gothenburg, Sweden, Oberascher chaired a session of the ECD Study Group, on June 16. The session continued on June 17, in this opportunity moderated by Green-Armytage. In his invited lecture, Oberascher [26] presented various projects on spatial simulation directed by himself, and a summary of contributions to the fields of color in architectural space and total color appearance by other authors [27, 28].

In 1997, during the 8th Congress of the AIC in Kyoto, Japan, there was a symposium on Color Design in the 21th Century, coordinated by Paul Green-Armytage and Miho Saito, and four oral sessions on Environmental Color Design, chaired by Don-Soh Park, Jin-Sook Lee, Silvia Rizzo, and John Hutchings. There were also two poster sessions on ECD [29, 30]. At the study group meeting, on May 27, it was decided that the ECD Study Group should be established on the internet, and José L. Caivano appointed as chairman together with Oberascher [31]. A salient aspect of the Kyoto congress was also that Hård and Sivik, the two initial leaders of the study group, received the AIC Judd Award.



The venue of the Kyoto congress

The AIC Midterm Meeting 1999 was held in Warsaw, Poland. The initially proposed subject of the congress, "Industrial Colorimetry", was changed "Applications of Colorimetry in Industry and Design" in order to attract a broader interest. In spite that there was not a formally arranged ECD meeting, a call for ECD membership was presented and distributed among the participants. Various ECD members (including some who joined the group there) presented papers or posters and had the opportunity to have informal talks and exchanges: María M. Avila, José L. Caivano, Paul GreenArmytage, Youngin Kim, Maud Hårleman, Susan Habib, and Silvia Rizzo, among others [32, 33].

As it happened in 1988 with the Winterthur meeting, the AIC Interim Meeting 2000 was on a subject very central to the interests of the ECD members, "Color & Environment", and was held in Seoul, Korea, on November 6-7, 2000. The total number of papers included 36 oral presentations and 45 posters. Though there was not a formal meeting for ECD members, various of them presented papers or posters: Berit Bergström, Sidney Chung, Osvaldo Da Pos, Susan Habib, Youngin Kim, Harold Linton, Silvia Rizzo, and Lucia Ronchi [34].



In the AIC Newsletter 15, there is a statement of the aims and a report about the situation and future steps of the study group [35]. During the 9th AIC Congress in Rochester, USA, June 24-29, 2001, there was a symposium on ECD, chaired by Caivano and Oberascher, and one related oral session on ECD/Architecture, chaired by Hutchings [36, 37]. Green-Armytage [38] makes a very good report of most of the papers presented on the subject of color in the built environment in

Rochester; also, a specific report on the ECD symposium and session will appear in the *AIC Newsletter* **16**, 2002.

Since its creation until today, membership of the ECD Study Group ranged approximately from 20 to 40 members, with variations along the years. Today, the group has 39 members representing 18 countries. There is an email list for exchange of information, whose subscribers are ECD members and other interested people that could become future members. At present, this list has 182 subscribers from 28 countries. To stimulate the participation in AIC congresses, it has been established that new ECD members are incorporated only at AIC meetings, and that failure to attend or present a paper or poster to an AIC meeting in a period of more than four years (the term between two general congresses) makes a member to be excluded from the group. The names and addresses of ECD members can be found on the internet. www.fadu.uba.ar /sicyt/color/ecd.htm, along with a call to subscribe the e-mail list, links to other pages of interest, and future AIC meetings.



L. Ronchi, J. Hutchings, J. Caivano

NOTES

- 1. A history of the early periods that gave rise to the creation of the AIC and its development until 1975 was published by G. Tonnquist [4, p.13-32]. A brief historical report of the AIC appears also in the AIC Newsletter 11, 1996.
- 2. During the term 1978-1981, the AIC president was C. James Bartleson, the vice-president, János Schanda, and the secretary/treasurer, Andreas Brockes.
- 3. The first conference on Color Dynamics was in 1976. These conferences continued in Hungary after the AIC meetings of 1976 and 1982, but as international meetings not related to the AIC. The 3rd International Congress of Color Dynamics was held in November 1988.
- 4. However, it seems that the original identification remained in the minds of some people, to the extent that in 1989, seven years before the study group started under the name of "Environmental Color Design", in his presidential address, Heinz Terstiege said that "the existing study groups were active in the past quadrennium ... *Color Dynamics* under the chairmanship of Leo Oberascher" [20, vol.1, p.17].

REFERENCES

- [1] AIC: Color 69, Proceedings of the 1st Congress, 2 vols, Musterschmidt, Göttingen, 1970.
- [2] AIC: Colour 73, Survey of lectures and abstracts of the papers presented, Adam Hilger, London, 1973.
- [3] AIC: *Color 77, 2nd Circular & Program*, Rensselaer Polytechnic Inst., Troy, 1977.
- [4] AIC: Color 77, Proceedings of the 3rd Congress, Adam Hilger, Bristol, 1978.

- [5] AIC: Midterm Tokyo Symposium '79, Circular & Tentative Program, Color Science Association of Japan, Tokyo, 1979.
- [6] AIC: Color 81, Proceedings 4th Congress, 2 vols., Deutscher Verband Farbe, Berlin, 1981.
- [7] A.Brockes: Report of the secretary to the 4th ordinary meeting of delegates in Berlin 1981. Written in June 1981.
- [8] A.Nemcsics: Letter to the AIC secretary/treasurer A. Brockes, 1981.
- [9] A.Brockes: Minutes of the meeting of the delegates in Berlin on 24 September 1981. Written in November 3, 1981.
- [10] Hungarian Commission for Colors: *Colour Dynamics '82, Bulletin* **1**, 1982.
- [11] J.Vos: Letter to the member organizations and observers of the AIC, July 22, 1982.
- [12] A.Hård and L.Sivik: Message from the ECD Study Group Secretariat to AIC member organisations, March 27, 1984.
- [13] L.Sivik and A.Hård: Minutes from the 1st meeting of AIC Study Group on ECD, Kungälv, Sweden, August 29, 1983. Written in November 16, 1983.
- [14] AIC: *Mondial Couleur 85, Abstracts*, Centre Français de la Couleur, Paris, 1985.
- [15] A.Hård and L.Sivik: Study Group on ECD. Summary of the Minutes of the 1985 Meeting, *AIC Newsletter* **3** (1986), 7-9.
- [16] Canadian Society for Color: AIC Meetings, from the minutes of J. Walraven, *The Colourist* **16** (1989) 2, p. 11.
- [17] P.Green-Armytage: Color 89, 6th Congress of the AIC, manuscript report, 1989.
- [18] W. Spillmann: Color in architecture, in ref. [20], vol.1, pp.31-42.
- [19] AIC: 6th Congress, Color 89, Final Program, Grupo Argent. del Color, Buenos Aires, 1989.
- [20] AIC: Color 89, Proceedings of the 6th Congress, 2 vols, Grupo Argentino del Color, Buenos Aires, 1989.
- [21] L.Oberascher: ECD report to AIC, AIC Newsletter 6 (April 1992).
- [22] AIC: 7th Congress, Colour 93, Programme and Abstract volume, Technical University of Budapest, 1993.
- [23] AIC: Colour 93, Proceedings of the 7th Congress, 3 vols, Hungarian National Color Committee, Budapest, 1993.
- [24] P.Green-Armytage: Synopsis of round table discussion on ECD, in ref. [23], vol.A, pp.175-184.

- [25] L.Ronchi and L.Oberascher: Light and color in environmental design: annotated terms, available as electronic file, c.1996.
- [26] L.Oberascher: ECD: Simulating real world complexity, in ref. [28], pp.49-55.
- [27] AIC: Interim Meeting '96, Colour & Psychology, Program and Abstracts, Swedish Color Centre Found., Gothenburg, 1996.
- [28] AIC: Colour & Psychology, from AIC Interim Meeting 96 in Gothenburg, Scandinavian Color Institute, Stockholm, 1997.
- [29] AIC: Color 97 Kyoto, the 8th Congress, Program & Abstracts, Color Science Association of Japan, Kyoto, 1997.
- [30] AIC: AIC Color 97, Proceedings of the 8th Congress, 2 vols, Color Science Association of Japan, Kyoto, 1997.
- [31] L.Oberascher and J.Caivano. 1997. Environmental Color Design, in ref. [30], vol.I, pp.133-134.
- [32] AIC: Midterm Meeting, Applications of Colorimetry in Industry and Design, Abstracts and Programme, Central Office of Measures, Warsaw, 1999.
- [33] AIC: Midterm Meeting, Applications of Colorimetry in Industry and Design, Proceedigns, Central Office of Measures, Warsaw, 1999.
- [34] AIC: Interim Meeting 2000 Color & Environment, Conference Program, Korean Society for Color Studies, Seoul, 2000.
- [35] J.Caivano and L.Oberascher: AIC Study Group on Environmental Color Design, *AIC Newsletter* **15** (2001), p.15.
- [36] AIC: Color 01, 9th Congress, Program & Abstracts, RIT, Rochester, 2001.
- [37] J.Caivano and L.Oberascher: Report of activities of ECD Study Group, in ref. [36], p.82-83.
- [38] P.Green-Armytage: Colour in art and design –current issues and prospects for the future, *Spectrum, Journal of the Colour Society of Australia* **15** (2001) 3, p.10-12.