

# The Summer 1968 in London and Zagreb: Starting or End Point for Computer art?

**Christoph Klütsch**

International University Bremen (IUB)  
Campus Ring 1  
D-28759 Bremen  
Germany  
info@computerkunst.org

## **Abstract**

The Exhibition Cybernetic Serendipity (London 1968) is often considered to be the first major exhibition of computer art. Nearly forgotten, is an exhibition in Zagreb that also took place in August 1968 connected to an international Colloquy “Computers and Visual Research. Zagreb August 3 - 4, 1968”. Both dealt in a systematically different way with the possibilities of computer art. While the show in London tried to give a wide range of possibilities, the ‘visual researchers’ in Zagreb bridged computer art with social and political implications, as well as with new philosophical and aesthetical theories on Information aesthetics. For a further scientific analysis of the first phase of graphical computer art, a deeper look into the events in Zagreb will be indispensable.

## **Keywords**

Cybernetic Serendipity, New Tendencies, early beginnings of computer art, Zagreb, London, visual research

## **ACM Classification Keywords**

J.5 ARTS AND HUMANITIES, fine arts

## **Introduction**

Only one day after the opening of the exhibition “Cybernetic Serendipity”[1] on August 2 through October 20, 1968 at the Institute of Contemporary Arts (ICA) in London, the international colloquy “Computers and Visual Research”[2] took place in Zagreb on August 3 - 4, 1968. This colloquy was part of the New Tendencies Movement, and led to an exhibition known as “Tendencies 4”[3] which ran from May 5 through August 30, 1969 in Zagreb. While Cybernetic Serendipity has garnered much acclaim, the colloquy together with an international exhibition about graphical computer art is nearly forgotten. A closer look at

the events in Zagreb might lead to a new evaluation of the exhibition in London. Specifically, two aspects of Cybernetic Serendipity will need to be reconsidered:

Rainer Usselman[4] recently argued that the comparatively apolitical circumstances in England in 1968 were a possible explanation for the public success of Cybernetic Serendipity. Usselman observes that there was little reflection on the implications regarding the use of computers in the arts, and society in the contemporary English press in 1968. “The same venture”, Usselman quotes Jasia Reichardt, “in Paris would have needed police protection”. With the exhibition “tendencije 4” in Zagreb this thesis has to be reconsidered. In Zagreb the political and social implications were addressed extensively. Secondly, while Cybernetic Serendipity is considered to be a starting point, in contrast to the international colloquy “Computers and Visual Research” in Zagreb, and the resulting exhibition “tendencije 4”, tried to connect computer art with the New Tendencies Movement, and could be seen as the end of the first phase of computer art.

## **Cybernetic Serendipity: An uncritical exhibition in an apolitical situation?**

Cybernetic Serendipity, curated by Jasia Reichardt, has been described in many different ways. Mihai Nadin[5] saw the show as being “exotic and stimulating”. For Edward A. Shanken[6] Cybernetic Serendipity “popularized the idea of joining cybernetics with art”. Herbert W. Franke[7] certified Cybernetic Serendipity “a world wide echo, that opened the doors of museums to computer art.” Brent MacGregor[8] has called it a “legend” and “landmark”. Douglas Davis was more cautious and saw in Cybernetic Serendipity “an early international survey of computer-inspired art”[9]. Cynthia Goodmann contrasts Cybernetic Serendipity with Pontus Hulténs exhibition “The Machine”[10], and diagnoses that Jasia Reichardt “successfully confronted the art community with the radical implications evolving specifically from the computer field.”[11] Jack Burnham, curator of the exhibition ‘Software’ in New York 1970, referred to Cybernetic Serendipity as “A touchstone which we all shared in those first months”[12].

Jasia Reichardt had this to say in her introduction to Cybernetic Serendipity:

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“The idea behind this venture, for which I am grateful to Professor Max Bense of Stuttgart, is to show some of the creative forms engendered by technology. The aim is to present an area of activity which manifests artists' involvement with science, and the scientists' involvement with the arts; also, to show the links between the random systems employed by artists, composers and poets, and those involved with the making and the use of cybernetic devices.”[13]

In 1965 Jasia Reichardt, was inspired by the German philosopher Max Bense, to begin working on the exhibition. Bense, founder of the 'Information Aesthetics', would later open the exhibition in August 1968. The result, after 3 years preparation was an exhibition which involved 325 participants. 60,000 people visited the show at the ICA, which ran 600 square meters [14].



**View into the exhibition Cybernetic Serendipity (in: Reichardt: Cybernetics, Art and Ideas)**

But there have been critical voices as well. The German artist Gustav Metzger working in London, published 1969 in the same journal which published the catalog “Cybernetic Serendipity” a critical article about automata in history and came to this scathing conclusion:

“At a time when there is a widespread concern about computers, the advertising and presentation of the I.C.A.'s 'Cybernetic Serendipity' exhibition as a 'technological fun-fair' is a perfectly adequate demonstration of the reactionary potential of art and technology. No end of information on computers composing haiku - no hint that computers dominate modern war; that they are becoming the most totalitarian tools ever used on society. We are facing by this prospect- whilst more and more scientists are investigating the threats that science and

technology pose for society, artists are being led into a technological kindergarten, the idea being that the artist can amuse himself and some other populace with the gadgetry of modern life.”[15]

Two years later Jasia Reichardt replied:

“Cybernetic Serendipity was not an art exhibition as such, nor a technological fun fair, nor a programmatic manifesto- it was primarily a demonstration of contemporary ideas, acts and objects, linking cybernetics and the creative process.” [16]

But perhaps one of the most profound reviews of Cybernetic Serendipity was given by Radoslav Putar in 1968. Significantly it was published in the Zagreb journal 'bit international 1':

“Even an indication of the potential consequences, modes of exploration and application of most of the examples presented and the new technological possibilities were not clearly shown in the exhibition as a whole. The average visitor could do no more than suspect the enormous possibilities of methods of computer projecting for the needs of design in industry. All the same the initiative of the Institute of Contemporary Arts in the exhibition of cybernetic serendipity is valuable. The very fact of a more intimate contact with examples of the use of new techniques is likely to have started off, even through the quite general message of the composition of the exhibition, a chain reaction of new ideas and initiative for the creation of fresh elements in, and relations towards visual communication.”[17]

Intentionally, the visitor was put in a situation where he could not distinguish between what was made by an artist, and what by an engineer. This was truly a new concept. So much so that Usselman wonders:

“Overall, the praise for Reichardt's undertaking seems almost unanimous and the near absence of critical debate equally striking. Could it be that the ICA's “happy accidents” flourished so well because they were staged in an atmosphere of breathtaking naïveté? Only a few lone voices seem to acknowledge the more serious and inevitably unhappy accidents that litter the history of cybernetics.”[18]

Usselman argues that the political situation in Great Britain in the late 60s was relatively calm, as opposed to: Czechoslovakia, France, Germany or the USA, for instance. In Great Britain “the subversive momentum of 1968 never unfurled in the same way, with the same force, as it did in continental Europe or the United States”[19]. Above all, it was this comparatively calm situation in England that made Cybernetic Serendipity possible.

“Against this backdrop, Cybernetic Serendipity [...] offered a light-hearted view of the modern world without raising too many (if any) objections or stirring fears.”[20]

## **Earlier exhibitions and conferences in Germany, USA and Czechoslovakia**

The world's first computer art exhibition took place on February 5 – 19, 1965 at the 'Studiengalerie der Technischen Hochschule Stuttgart' [21] (Germany), where Max Bense had invited Georg Nees to show his works. Encouraged by this exhibition Frieder Nake would show his works later that year along with Georg Nees at the Galerie Niedlich in Stuttgart, from the November 5 - 26, 1965. An exhibition also took place in the Rechenzentrum Darmstadt [22] which ran from January 15 through February 15, 1966. Meanwhile, and totally independent of the shows in Germany, works by A. Michael Noll and Bela Julesz had been shown in New York at the Howard Wise Gallery from the April 6 – 24, 1965.

In the January 1966 issue of 'Computers and Automation' [23], Leslie Mezei at the University of Toronto suggested building a network for sharing information about events connected with computer art. Shortly afterwards, he published a bibliography [24] on computer art. In June of 1966, the conference "Design and Computer"[25] was held at the University of Waterloo, Ontario, Canada. The conference was organized by Martin Krampen, who at that time worked at the Institute of Design at the University of Waterloo and at the Hochschule für Gestaltung in Ulm, Germany. The participants were: Allen Bernholtz, Edward Bierstone, Steven A. Coons, William A. Fetter, Edwin L. Jacks, Kenneth C. Knowlton, Marvin L. Manheim, A. Michael Noll, Kenneth G. Scheid, Arthur E. Neuman. The fact that A. Michael Noll, who participated at the conference, was later shown in the exhibitions organized by Martin Krampen in Stuttgart and Ulm, illustrates the importance of this new network.

On November 12, 1966 a conference organized by the "Galerie d" in Frankfurt a.M. accompanied the opening of the exhibition "Programmierung in bildender Kunst und Industrial Design" (Programming in Fine Arts and Industrial Design). William E. Simmat dedicated volume 5 of "Exakte Ästhetik"[26] to the conference. Shown were works by: Kurd Alsleben, Frieder Nake, Georg Nees, R. Hartwig and his associates. Presentations on computer art were given by: Max Bense, Hubert Kupper, Heinz Görge, Abraham A. Moles and Frieder Nake. The conference was sponsored by IBM Germany and Remington Rand UNIVAC.

From November 3 through December 15, 1967 the exhibition "Konstruktive Tendenzen aus der Tschechoslowakei" (Constructive Tendencies from Czechoslovakia) at the 'Studiogalerie der Johann Wolfgang Goethe Universität Frankfurt' [27] showed six Czech artists. The show included the first Computer graphics by Czech Zdeněk Šýkora. In the same year, there were two exhibitions called "Computergrafik", both organized by M. Krampen, that showed the works of: Nake, Noll and Krampen. The exhibitions took

place at the Behr house in Stuttgart, and the Studio f in Ulm.

In Feb. 1968 an international computer graphic traveling exhibition "Computerart" was organized by Jiří Valoch. The show was brought to the House of Art in Brno, a Gallery in Jihlava and a Gallery in Cottwaldov (all in Czechoslovakia) and contained works by: Charles Csuri, Leslie Mezei, Frieder Nake, Georg Nees, A. Michael Noll, and Lubomir Sochor. Also, just one month after the opening of Cybernetic Serendipity the CTG (Computer Technique Group) held an exhibition in Tokyo at the Tokyo Gallery from September 5 – 21, 1968.

## **New Tendencies**

The first New Tendency exhibition in 1961 was curated by Matko Meštrović and referred to the 1960 manifest from the French "Groupe de Recherche d'Art visuel" including works by the 'Gruppo N' of Padua and the 'Gruppo T'. When in 1968 the Galerije Grada in Zagreb organized the international colloquy "Computers and Visual Research", this colloquy was a preparation for the fourth biannual New Tendencies exhibition in 1969.

This European movement, Tendencies, beginning in Zagreb, was characterized by Aldo Pellegrini as:

"a new group of artist who were working along the line of pure visuality, all of them with an experimental bent. It is the experimental character and the lack of constructive or compositive intentions that sets them apart, in spite of their having the same principles of clarity and rationality, from the concrete artists and the neoconcretists." [28].

These elements of concrete art go even further back to the founding of the group "Exat '51" which was active in former Yugoslavia from 1951-56, recalling and holding up the Bauhaus tradition against social realism. One of the founders of Exat '51 was Vjenceslav Richter, member of the execute committee of tendencije 4 in 1969. The organizers of the colloquy in Zagreb, tried to present computer art in the framework of one of the dominating art movements in Europe. Toward the end of the Tendency movement with its root in Constructivism Zagreb offered a meeting place for computer graphics and Cybernetics.

In 1968 the Galerije Grada in Zagreb founded the journal 'bit international' (Vol. 1-9; 1968-1972). In the preface the editors explain "why bit appears":

"This is the reason why the editors of b i t have started this magazine to present the theory of information, exact aesthetics, design, communication mass media, visual and related subjects; and to be an instrument of international cooperation in a field that is becoming daily less divisible into strict compartments." [29]

They saw in the realm of communication great differences and gaps between the scientific and the artistic, the possibilities of modern technology and their application, between lonely pioneers and the aspirations of large communities,

and between developed and underdeveloped cultural environments, to name a few.

### Information aesthetics

Max Bense and Abraham Moles filled most of the first 130 pages containing “bit international 1” presenting their work on the “information aesthetics”. Bense and Moles tried in different ways to offer a method to determine the value of art on mathematical, scientific, and empirical basis. Referring to the theories of David Birkhoff[30] about mathematical aesthetics, and Claude Shannon’s Information theory[31], art was considered to get its purely aesthetical value from the relation between order and complexity respectively information and redundancy on macro- and microaesthetical levels. Combined with Norbert Wiener’s Cybernetic Theory, the process of art criticism should not further rely on subjective opinions, but follow rational scientific criteria. What was thought to be a sharp weapon against art historian chatter, was soon picked up by Bense’s scholars and mathematicians George Nees and Frieder Nake as a tool to program a computer so that it could produce aesthetic objects with a significant aesthetic value by itself.

### The International Colloquy Computers and Visual Research on August 3 –4, 1968 in Zagreb

Boris Kelemen, who brought the notion of “visual research” into the title of the conference, was one of the organizers for the international colloquy “Computers and Visual Research” held in 1968 and the exhibition “tendencije 4” in 1969. Other members on the organization committee for the exhibition were: Frieder Nake in Germany, Leslie Mezei in Canada, and Abraham A. Moles in France.

On the August 3 – 4, 1968 texts by: Marc Adrian, Kurd Alsleben, Alberto Biasi, Vladimir Bonačić, Herbert W. Franke, Branimir Makanec, Matko Meštrović, Leslie Mezei, Abraham A. Moles, Vladimir Muljević, Frieder Nake, Vjenceslav Richter, Zdenko Šternberg, Božo Težak and Jiří Valoch were presented. In his introduction to the colloquy Abraham A. Moles drew attention to the scientific concept of experiment, which has been picked up by modern art.

“Experimentation is a systematisation and exploration in the field of possibilities, it differs primarily from trying. In multiple tries which we have assisted for twenty years in modern art, no serious analysis was made. [...] Experimentation is exercise, exercise in the field of possibilities, defined by laws of constraint or an algorithm, this means by a succession of steps of thought in order to finish a definite goal.”[32] (authors translation)

Moles realizes the closeness of scientific and artistic processes through the concept of experiment. He sees the traditional art mainly following the concept of “trial and error”, in contrast the concept of experiment is scientifically defined. Experiments are characterized through a methodo-

logical planned construction of circumstances, which then are subject to scientific observation. From this point it follows that they must be able to be repeated. This concept clearly opposes the classical view of an artist as a spontaneous genius who is expressing something through art.

But Moles also realized the impact computers would have on our society. Because computers are information processing machines, at the core of computers are algorithms. The computer artist thus, at this time was either a programmer or collaborating with a programmer, has the role of a researcher in the field of possible applications of computers.



International Colloquy “Computers and Visual Research” Zagreb August 3 – 4, 1968. Valoch, Picelj, Alsleben, Franke, Nake, Kelemen, Richter (in: bit 3)

The artist becomes involved in defining which kinds of new objects will be created for a global society:

“An artist does not any more touch and handle directly the colour, the matter, objects, s/he handles algorithms, more or less abstract, it must be necessarily formed at this level of abstraction. [...] The role of the artist at this time appears to be to build algorithms or programs for systematic exploration in a field of possibilities, defined by a certain number of constraints which constitute a definition of functionality, and a definition of the fundamental doctrines of object creation for the global society.”[33] (authors translation)

Moles introduction was followed by some “notes” from the writer Marc Adrian, who asks in “notizen zu t-4” (notes on t-4) if the New Tendencies after 6 years could be considered to be dead. As an answer to that question he sees the New Tendencies as a part of a spiritual movement, which is working on a reconstruction and secularization of the humanistic world-view:

“what entered general consciousness from 1960 till present as NT was part of a larger intellectual movement and is connected with the general renewal of the humanistic world view and the final secularization.”(authors translation) [34]

The architect and artist Vjenceslav Richter, addressed the question of whether there is a “dilemma” in working with a computer. He sees in the psychological interpretation of an author's mind a misinterpretation, and suggested instead to see the artist mediate with his work through a dialog of sorts. That the dialog is now “passing through the filter of a computer offers a wide scope of possibilities and of extreme difficulties.” [35]

After this “dilemma” the earlier quoted political comments concerning the 'situation in 1967' by Alberto Biasi[36], a member of the Italian 'Gruppo N' from Padua, talked about the political situation in Europe instead of talking about computer art, it was a foreshadowing of the events of August 20 – 21, 1968, when what is now called the Prague Spring was ended by Soviet troops.

Frieder Nake[37], a mathematician from the Rechenzentrum Stuttgart at that time, was baffled by Biasi's comments and changed spontaneously to the problem of how computer art and politics can be combined. He warned that the left should not make the mistakes of the right, that computers should not be demonized, and that it was important to stay with the concept of rationality serving human beings. He went on to say that computer art in the 60's did not have to be, and was not apolitical at all. He closed his speech with the remark that Cybernetic Serendipity had mainly addressed the playful instinct, and the upcoming exhibition “tendencije 4” might address the social consciousness.



**Figure 1** Conference Zagreb 3. and 4. August 1968 first row: Nake, Franke, Alsleben (in: bit 3)

Matko Meštrović, curator of the biannual New Tendencies exhibitions starting in 1961, commented on “the situation of nt”. After listening to the contribution made by: Moles, Adrian, Richter, Biasi and Nake he tries to summarize the New Tendencies movement and specifically refers to the political circumstances.

“It is a fact that [...] almost a decade ago, there emerged a genuinely young generation with a vision of a new world reckoning more with the future than with the past. [...] As the years passed by, after the first, second, and third Tendencies in Zagreb, it has become increasingly clear that the consistency of the movement would not be

sustained but, however, it has not been clear at all what were the real reasons of the impossibility of its consistency. These reasons may be found in social resistances and theoretical radicalization; as for the science, being itself alienated and manipulated, no real relation has been set up with it. Also, it has not been clear enough that a theoretical alignment should be also a political alignment.”[38]

Next the engineer Vladimir Bonačić[39] from the Ruđer Bošković institute in Zagreb gave a rather broad overview on the potential use of computers in different fields. Vladimir Muljević from the Electro technical faculty in Zagreb asked: “What are the points of contact between computer and artist?”[40] Muljević gives three possible answers: First, he made a parallel between scientists and computer artists in the way that they have the experiment in common, rather than artistic “attempts”. Second, he saw the connection between “stylistic programming” and variations. And finally, he talked about the notion of chance, which - surprisingly - “should not be allowed to play the essential role in computer application in artistic research”, because chance is not a phenomenon genuine to computer applications. The day ended with technical papers by Božo Težak about ‘physico-chemical systems’. He commented on the role of ‘interaction in artistic expression by means of computer’, focusing on time-sharing as a new way of computer utilization.

The second day was opened by Zdenko Šternberg from the Ruđer Bošković institute in Zagreb. He directed attention to the relation between information theory, computer and artistic creation, and wondered if a computer could make a selection between artistic works based on information theory. Abraham Moles then emphasized his agreement with Šternberg's comments by recognizing the unity between art and science in the creative procedures in statu nascendi. Lastly, he warned about the difficulty in finding the appropriate fields in which information theory could be used.

Jiří Valoch[41], compared three very different approaches to computer art: Charles Csuri, who worked in a team with a programmer and a computer, where as Lubomir Sochor, an engineer was known for working with an analog computer. Finally, Zdeněk Sýkora, was mentioned whose artistic development led to the necessity of using a computer.

Kurd Alsleben addressed the dimension of semiotics and gave an analysis of perception of signs in the tradition of Pierce, and gave a sketch of the possible adoption of sign theory to computer controlled processes.

Herbert W. Franke[42] opened the accompanying exhibition at the colloquy. He points out that the computer is capable of three kinds of information processing: creation of order, transformation of order and destruction of order. Because it might be hard to evaluate computer art, he suggested a cybernetic art theory, which would be based on a scientific theory of perception.



**Exhibition at the international colloquy “Computers and Visual Research” 3-4.8. 1968, Zagreb (in: tendencije 4)**

The conference papers closed with a contribution by Leslie Mezei[43], who did not attend the colloquy in person. He divided computer art (and its artists) into seven categories. *mathematical curves* by Petar Milojević, Lloyd Sumner, Jack Citron, John Whitney, Maughan S. Mason, R. K. Mitchell. *Random abstract design*: by Georg Nees, Frieder Nake, *representational art* by Charles Csuri, Leslie Mezei, *designs with letters* by Leslie Mezei, *scanned photographs* by Ken Knowlton, Leon Harmon, *computer generated movies* by Ken Knowlton, A. Michael Noll, *computer graphics* by William A. Fetter, and *computer-controlled animation stand and camera* by Kar K. Liang, Norman MyLaren.

#### **new tendencies 4**

After the international colloquy and exhibition “Computers and Visual Research” on August 3 – 4, 1968, an informative seminar took place on January 10 – 12, 1969. Both colloquies in Zagreb were in preparation for the tendencije 4 exhibition, that took place between May and August 1969. It included another colloquy, three in total, and four exhibitions. The four exhibitions mounted were:

- “tendencije 4” at the Muzej Za Umjetnost I Obrt,
- “Computers and Visual Research” at the Galerija Suvremene Umjetnosti,
- “typoezija” at the Galerija Studentskog Centra
- Exhibition of books and publications, shown at the Permanent International Exhibition of Publications (ISIP)

At “tendencije 4” 175 works by members of the new tendencies were shown. At the “Computers and Visual Research” 189 works of computer art by the following artists were shown: Marc Adrian, Kurd Alsleben, “ars intermedia” (Otto Beckmann, Alfred Grassl), Vladimir Bonačić, California Computer Products inc. (Kerry Strand, Larry Jenkins, Doyle Cavin, Dee Hudson and Jane Moon), Compos 68 (Jan Baptist Bedaux, Jeroen Clausman and Arthur Veen), Valdemar Cordeiro, Charles Csuri, Darel D. Eschbach, jr., William Allan Fetter, Alan Mark France, David r. Garrison, Jens Harke, Leon D. Harmon, Kenneth C. Knowlton, Hiro-

shi Kawano, Auro Lecci, Robert Mallary, Gustav Metzger, Leslie Mezei, Petar Milojević, Frieder Nake, Georg Nees, A. Michael Noll, Duane Michael Palyka, Computer Center “Boris Kidric” institute, Manfred Robert Schroeder, Lloyd Quinton Sumner, Alan Sutcliffe, Zdeněk Šykora, Evan Harris Walker and Edward Zajec.

Boris Kelemen, a co-organizer of “tendencije 4”, had a conception in mind which he described as the following:

“Finally, this exhibition should not be understood as the supremacy of technology, but as an endeavor to overcome the new technology and use it for new results in the visual field.”[44]

The section “computers and visual research” in the “tendencije 4” event, was probably the most comprehensive exhibition of computer art in the 60's and was, with few exceptions, widely ignored until just recently. Frieder Nake, in an exhibition catalog “Algorithmus und Kunst. 'Die Präzisen Vergnügen“ (Algorithm and Art. 'The Precise Pleasures' 1993) calls the activities in Zagreb a “particularity” (Besonderheit)[45], and points out the importance of the journal “bit international”.

In 2000 Darko Fritz curated an exhibition “I'm still alive”[46] in reminiscence of the early computer art exhibitions in Zagreb, and was mainly based on the material shown at the “tendencije 4”. Looking back he stated in “Amnesia International”:

“The fourth Tendencies exhibition (1968/69) was marked by a further penetration of the idea of a theory of information and exact aesthetics. The artistic use of computers was a “last try” of the Tendencies movement to synchronize its goals as the “scientification of art” and “bettering the society” and historical movement of 1968.”[47]

While the Cybernetic Serendipity exhibition had big financial support, and its success lead to the birth of the Computer Arts Society[48], a part of British Computer Society, new tendencies had only the help of the Ruder Bošković institute and the Electro technical faculty in Zagreb. Vera Turkovic recalls that the

“symposium in Zagreb was denied every financial support with the explanation that “the orientation of the symposium as well as that of the group which has organized it, is too avant-garde.””[49]

Nevertheless, a committee for an international competition for works in the field of computer art was planned during the colloquy “Computers and Visual Research” in Zagreb, on August 3 – 4, 1968. A group of artists and researchers met for two days “to discuss the relations between the experiences gained in the course of the development of “NT4” (New Tendencies 4) and the possibilities produced by computers.”[50] The committee included the Italian philosopher and author Umberto Eco, who already dealt with information aesthetics in his 'Opera aperta' in 1963, the Swiss designer Karl Gerstner, the German Martin Krampen from the Ulm school of design and two locals art historian Vera

Horvat-Pintarić and Boris Kelemen. In their final statement they came to this conclusion:

“With regard to the task we have been entrusted with, i.e. to evaluate the achievements in the realm of computer-aided visual research, we feel it necessary to emphasize the following: that, in our opinion, in view of the experimental nature and completely open domain represented by the materials exhibited, criteria for judging the entries, e. g. aesthetic quality, complexity of programming or mathematical ingenuity, cannot be established for the time being. This is so especially if we consider the fact that the goal of computer-aided aesthetic research is to suggest new aesthetic parameters in the future. It would be 'authoritarian' to submit such research to judgment in terms of traditional parameters. “[51]

### Reactions

While the exhibitions at the colloquy 1968, and the 'tendencije 4' 1969 didn't draw much attention from the art world, two contemporary voice should be quoted here: Otto Beckman, who in 1966 founded the computer artist group 'ars intermedia' in Vienna, reviewed[52] the international colloquy taken place on Mai 6 1969 during the opening of 'tendencies 4'. Beckmann states that *the colloquy clearly shows that an important stage in the pioneering time in computer art ends. The exhibition was a clearing. The organizers goal to create an international hotspot for technological development, is clearly visible. Zagreb dared what the rest missed so far: Vienna hesitated too long, Germany and other countries came up with only half solutions, after a second of shock, which could last years, people will decide for the easiest way and import ready made exhibitions from the 'Galeria suvremene umjetnosti' in Zagreb, to see what new tendencies happened in their own countries. Only England was ahead with a major exhibition in London.* (my translation)

In April 1969 the Computer Arts Society, with Gustav Metzger as Editor, published PAGE. The first volume of PAGE drew attention to the events in Zagreb. On May 5, 1969 along with art historian Jonathan Benthall, and Gordon Hyde, he delivered the “Zagreb Manifesto” to the international symposium “Computers and Visual Research” in Zagreb. They state:

“It is now evident that, where art meets science and technology, the computer and related discipline provide a nexus.” [53]

### Conclusion

On April 16, 1970, 18 month after the closing of Cybernetic Serendipity, and 10 month after the closing of tendencije 4, Frieder Nake announced in PAGE 8: “I stop exhibiting for the present” As a reason he offers: “It looks as if the capitalist art market is trying to get hold of computer productions. This would mean a distraction from visual research.”

He concluded: “the actual production in artistic computer graphics is repeating itself to a great extent. Really good ideas haven't shown up for quite a while.” One year later in PAGE 18, Nake reinforced his opinion with an article “There should be no computer art”.

One year after two international exhibitions about computer art in London and Zagreb, the new bulletin for computer art PAGE in London started. In this bulletin we find on the one side voices expressing and emphasizing the atmosphere of a new beginning in the arts, on the other side Frieder Nake a representative of the Stuttgart school of computer art announces in the same bulletin the end of his public activities, disappointed about the unimaginativeness of computer arts and the lack of social responsibility after the first experimental period.

### Acknowledgment

I would like to thank Frieder Nake for his critical comments, and Darko Fritz for reviewing the facts about Zagreb.

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