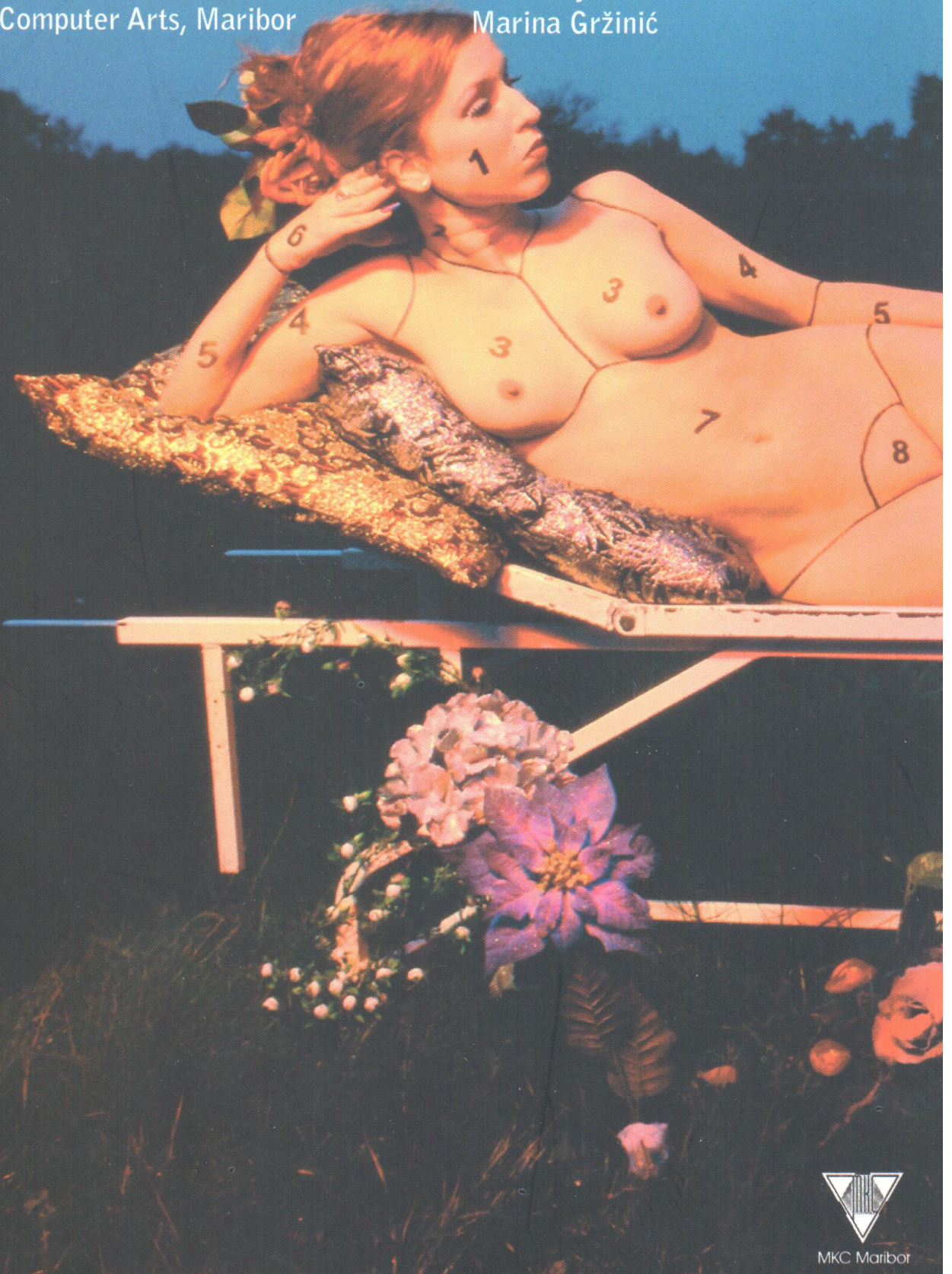


The Future of Computer Arts

& The History of the International
Festival of Computer Arts, Maribor
1995-2004

Edited by
Marina Gržinić



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ARTNETLAB – THE ESSENTIAL CONNECTION BETWEEN ART AND SCIENCE

1. Introduction

The 10th International Festival of Computer Arts (IFCA) in Maribor in 2004 marks the Fifth Anniversary of ArtNetLab, a joint collaboration framework of art and engineering students. The students come from the Computer Vision Laboratory at the Faculty of Computer and Information Sciences (Prof. Franc Solina) and from the Video and New Media Department at the Academy of Fine Arts (Prof. Srečo Dragan), both institutions being part of the University of Ljubljana, Slovenia. Students from the respective institutions who are involved in this effort have collaborated in bringing together modern arts and information technologies since 1995.

The first art related project that I initiated at the Computer Vision Laboratory was the Slovenian Virtual Gallery (SVG), which was a typical first generation web multimedia presentation consisting of an interconnected set of texts, images, and video clips. An alternative way of exploring this set was by “walking” through a virtual gallery space. Due to the lack of appropriate tools at that time we wrote our own data management tools and tools for the automatic generation of HTML documents.¹ The project was developed in the first half of 1995 at

¹ A. Lapajne, B. Prihavec, A. Ruben, Ž. Kranjec, F. Solina, “Slovene Virtual Gallery,” in F. Solina, B. Zajc (Eds.), *Proceedings 4th Electrotechnical and Computer Science Conference ERK'95*, Portorož, Slovenia, 1995, Vol. A, pp. 3-6.

F. Solina, “Virtual technology and remote observation over the Internet for art applications,” in *Konferenzband EVA 2000 Berlin: Elektronische Bildverarbeitung & Kunst, Kultur, Historie: die 7. Berliner Veranstaltung der internationalen EVA-Serie Electronic Imaging & the Visual Arts*, 25-27

the outbreak of the World Wide Web expansion, as a demonstration project to show how Slovenian fine art could be presented on the Internet. In cooperation with distinguished Slovenian art-historians and curators we prepared an overview of Slovenian art from the gothic period up to the present. SVG was well received in Slovenia and, as judged by the high number of visits, on the Internet in general.² In 1996 the McKinley Group's online editorial team rated SVG a "4-star" site excelling in "depth of content," "ease of exploration," and "net appeal."

While I was presenting SVG in the fall of 1995 at Infos, the annual information technology trade fair in Ljubljana, I met Srečo Dragan, professor of video art and new media at the Academy of Fine Arts in Ljubljana, which initiated our future collaboration. The multimedia concept developed for SVG, along with other technical expertise from our laboratory, in particular in computer vision and robotics, was used in several of Dragan's art-Internet installations. One of the more important technical solutions that we developed was the Internet Video Server (IVS), which enabled live video transmission over the Internet along with a novel panoramic-based user interface. The system consisted of a CCD camera mounted on a robot pan/tilt manipulator which made it possible to turn the camera in any direction. Using the panoramic image assembled out of all possible camera views as a background for the live video image, the user gets a much better understanding of the remote location and a suitable context for pointing the camera in new directions.³ A series of interactive installations followed. *Rotas-tenet* (May 1996) dedicated to the architect Jože Plečnik, connected by new technological means the Hradcany castle in Prague with Preseren Square next to the Three Bridges in Ljubljana, both urban sites enhanced by Plečnik's architectural intervention.⁴ This was also the first occasion when live video from an open public space in Slovenia was available on the Internet. *Netropoliscyborg's Eye* project (1997) was prepared for the European Month of Culture in Ljubljana.⁵ It offered a telepresence experience on the Internet at

October 2000 in the Staatlichen Museen zu Berlin - Preussischen Kulturbesitz at the Berliner Kulturforum, Berlin, Gesellschaft zur Forderung angewandter Informatik e.V., 2000, pp. 171-177.

F. Solina, "Internet Based Art Installations," *Informatika* 24(4):459-466, 2000.

² Andrej Lapajne, "Slovene Virtual Gallery," *M'ARS, Magazine of the Museum of Modern Art Ljubljana*, VIII (3-4): 90-92, 1996.

³ B. Prihavec, F. Solina, "User Interface for Video Observation over the Internet," in: *J. netw. comput. appl.* 21: 219-237, 1998.

⁴ B. Prihavec, A. Lapajne, F. Solina, "Aktivno video opazovanje preko interneta," in: B. Zajc, F. Solina (Eds.), *Proceedings 5th Electrotechnical and Computer Science Conference ERK'96*, Portorož, Slovenia, 1996, Vol. B, pp. 117-120.

⁵ S. Dragan, P. Grabnar, B. Prihavec, S. Rozman, F. Solina, A. Vidmar, "Netropolis - Kiborgovo oko," in: B. Zajc (Ed.), *Proceedings 6th Electrotechnical and Computer Science Conference ERK'97*, Portorož, Slovenia, 1997, Vol. B, pp. 11-14.

S. Dragan, F. Solina, B. Prihavec, S. Korenč, B. Nemeč, "Netropolis - the Cyborg's Eye: Project," in: *European Cultural Month Ljubljana 1997. Programme, May 15 to July 5, 1997*. Ljubljana Municipality, 1997.

various locations in Ljubljana, combining live video images with navigable virtual architectural space. *Netropolis-clavis Urbis* (1998) was exhibited at U3, the 2nd Triennial of Contemporary Slovene Art in the Modern Art Gallery in Ljubljana, curated by Peter Weibel. In addition to previous technologies, this project featured a camera-carrying robot telecontrolled over the Internet.⁶ On the basis of all these projects the stage was set to widen the collaboration to involve more of our students on a regular basis.

2. The ArtNetLab collaborative

In the fall of 1999 professor Srečo Dragan and I started a still unofficial, but permanent collaboration that teams fine art students with computer science students to produce art projects involving the Internet, new media, interaction and other new information technologies. For the fine art students the main benefit of this collaboration is to gain hands-on experience with the latest new information technology and the technical support of computer science students in order to build technically sophisticated web sites and art installations that they themselves envision. On the other hand, for the computer science students it is important to gain experience in negotiating, designing, building and managing small but self-contained projects for customers who are in this case fine art students. The experience of working in teams is for both kinds of students very important since it is the norm in real life but rarely practiced during university studies. The computer science students who participate each year in the ArtNetLab initiative are enrolled in my course "Methods of Communication," while the participating fine art students are enrolled in Srečo Dragan's graduate course on video art.

The process of setting up project teams starts at the beginning of every academic year when fine art students present their ideas to their computer science colleagues. Each fine-art student is teamed up with four to five computer science students, who all together form a project team. The entire team must then meet and together refine the original idea, find appropriate technical solutions, and be able to write and present a detailed plan for the project so that the project can be finished by the end of the semester. Somewhere in the middle of the semester each project team must report on the project and make a demonstration of the project, and the same again at the end of the semester when the final reports are due. Typically, a written report must be presented, an oral presentation and demonstration given, and a web page created, presenting the project and/or the final result.

⁶ B. Nemec, B. Prihavec, F. Solina, "Leonardo – A Mobile Robot for Gallery Visits Using the Internet," in: M. Ceccarelli (Ed.), *6th International Workshop on Robotics in Alpe-Adria-Danube Region*, Cassino, Italy, June 26–28, 1997, pp. 571–576.

The most successful projects are then exhibited at the annual International Festival of Computer Arts in Maribor. Selected ArtNetLab projects were later exhibited at other Galleries and festivals, for example a selection of ArtNetLab projects were shown at the Finžgar Gallery, Ljubljana (2002) and at the Forum Stadtpark, Graz (2003).

The typical relationship between art and engineering students in these interdisciplinary teams is not a standard customer-developer relationship. The initial often very vague ideas presented by the fine-art students are often modified in the light of the technical expertise of the computer science students. In this sense, often all members of the project team are co-authors of the final result that is exhibited.

3. Some technical highlights of the ArtNetLab projects

A more detailed overview of the best projects resulting from the ArtNetLab collaboration and their artistic concepts are given in other chapters of this book. In this section I will highlight only some technically more sophisticated projects. A comprehensive archive of all projects is available on the ArtNetLab web site.⁷ 2000 was the first year when student projects resulting from the ArtNetLab initiative were presented at the festival in Maribor. A total of five projects were produced (Media Reality Identity Construct, Raining, Diving, Inter-cooking-Alchemy, and Water) which all consisted of animated web pages combining 2D and 3D graphics (VRML), video clips, and music. A common entry web page was designed for all five projects.⁸

From the 2001 ArtNetLab production the project *WAP Kitchen* by Dušan Bučar must be singled out because of its technical excellence which enabled participants to interact with kitchen appliances using mobile phones and the WAP protocol.⁹ A mobile robot was also an integral part of the *WAP Kitchen* installation, which freely moved among the visitors by avoiding them since the built-in sonar sensors could detect obstacles in real-time.

In 2002 my own project *15 seconds of fame* was exhibited within the ArtNetLab framework, which was implemented by my graduate students Peter Peer, Borut Batagelj and Samo Juvan. Inspired by the production of such a multitude of art projects, I decided to express my research interests in computer vision by

⁷ ArtNetLab: <http://black.fri.uni-lj.si>.

⁸ S. Dragan, F. Solina, "New Information Technologies in fine arts," in: F. Solina and S. Dragan (Ed.), *Proc. Conf. New Information Technologies in Fine Arts, Fourth Int. Multi-Conf. Information Society - IS2001*, Ljubljana, Slovenia, 2001, pp. 441-444.

⁹ M. Jogan, D. Bučar, M. Artač, M. Auflič, S. Mervar, M. Škarabot, S. Dragan, F. Solina, "WAP kitchen," in: B. Zajc (Ed.), *Proceedings 10th Electrotechnical and Computer Science Conference ERK'01*, Portorož, Slovenia, 2001, Vol. B, pp. 139-142.

building an interactive art installation.¹⁰ The technology that was used in the installation involves human face detection.¹¹ Video cameras in combination with various types of displays have been used in numerous art installations, often as a sort of electronic mirror. *15 seconds of fame* is an interactive installation that every 15 seconds generates a new pop-art portrait from a digital photo of a randomly selected gallery visitor. The installation was inspired by Andy Warhol's ironical statement that "In the future everybody will be famous for 15 minutes." The installation detects human faces and crops them from the wide-angle photo of people standing before the installation. Pop art portraits are then generated by applying randomly selected filters to a randomly chosen face from the audience. These portraits are then shown in 15-second intervals on the final-panel computer monitor, which is framed as a painting. Electronic copies of portraits could also be ordered by e-mail.

Another technically demanding project in 2002 was the interactive VRML *Inside Space* by Kristina Horvat Blažinović. The user/participant was invited to explore a 3D maze inhabited by video clips. In 2003 Metka Zupanič, posing difficult interoperability problems in using video imagery from different distant sources, featured video surveillance cameras at train stations in the project *You Never Watch Me Where I Can See You*. The project *Bank Robbery* by Nika Oblak and Primož Novak used a camera hidden near a TV set to take a photo of the visitors watching a mock news report video of a bank robbery on the TV. This photo is then incorporated into the video that they are watching as a photo of the suspect robbers. Another sophisticated VRML based project at the 2003 IFCA was *Video Space* by Narvika Bovcon and Aleš Vaupotič. The VRML generated space featured 3D objects in a landscape covered by 2D photographic textures and video clips from earlier projects, all explorable by directing the interested gaze of the observer.

The 2004 production is still under development. Projects will feature even further types of interaction. Beside using video cameras to register the environment and detect shapes and movements, biological signals such as a heart beat will be used to generate abstract shapes. Another project will present interactive comics enabling the reader to pursue different paths through the story.

4. Conclusions

Contemporary arts interact with science and technology in many ways. The ArtNetLab initiative is a small but for Slovenia important forum and meeting space where young aspiring artists, scientists and engineers can collaborate to

¹⁰ F. Solina, P. Peer, B. Batagelj, S. Juvan, J. Kovač, "Color-Based Face Detection in the '15 Seconds of Fame' Art Installation," in: *Proceedings of Mirage 2003*, (INRIA Rocquencourt, France, 2003), pp. 38-47.

¹¹ F. Solina, 15 Seconds of Fame. *Leonardo* 37(2), 2004.

bridge the traditional divisions between disciplines. The scale of the recent development of media and technology has affected not only the workplace and the entertainment industry but also large areas of art (media art, video, computer graphics, animation, net-art, interactive art, virtual art, telepresence art, genetic art etc.). It is therefore imperative for fine art students to gain some first-hand experience with the technology that enables the production of these new genres of art.

Mastery of technology and off-the-shelf production tools by the artists themselves is often not enough for advanced projects. New devices or interfaces must be designed, new software written and enabling such is one of the main benefits of the interdisciplinary and collaborative team approach. From an engineering or scientific point of view, such projects are also very stimulating since they foster novel and alternative methods of using new technology without the pressing demands for immediate profit. New media art projects offer a stimulating environment to experiment freely so that a new generation of artist-researchers and researcher-artists can emerge, who will hopefully develop art meaningful for our times and set new agendas in science and technology that address today's real human needs.

The ArtNetLab initiative will hopefully evolve in the near future into a more permanent framework with regular financial support. One possible direction for growth is also a new interdisciplinary master's degree program at the University of Ljubljana, which will involve also other art academies.

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Armin Medosch

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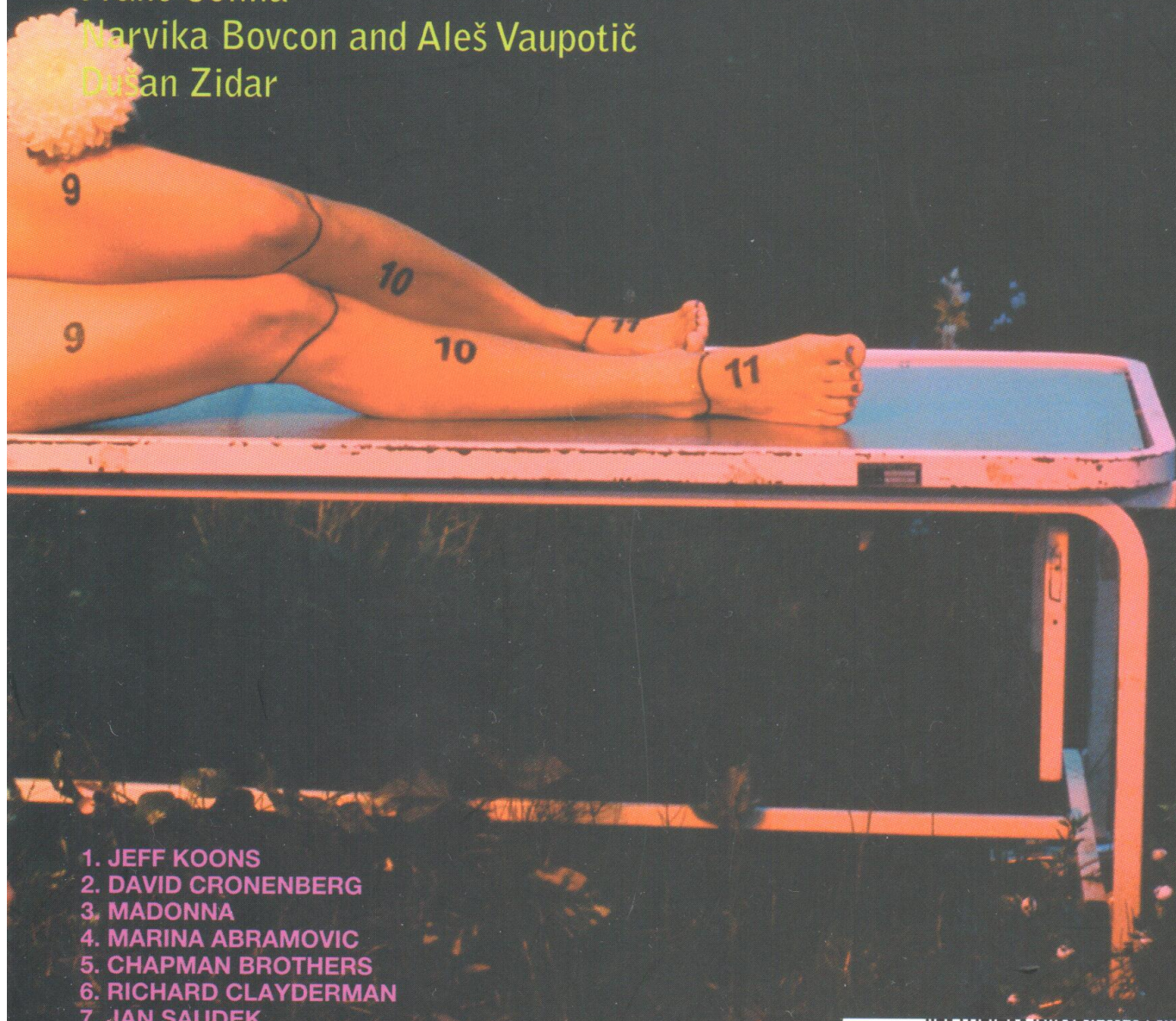
Stelarc

Srečo Dragan

Franc Solina

Narvika Bovcon and Aleš Vaupotič

Dusan Zidar



1. JEFF KOONS
2. DAVID CRONENBERG
3. MADONNA
4. MARINA ABRAMOVIC
5. CHAPMAN BROTHERS
6. RICHARD CLAYDERMAN
7. JÁN SAUDEK
8. ANNIE SPRINKLE
9. HELMUT NEWTON
10. RON ATHLEY
11. PEDRO ALMODOVAR

