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August 23 – 26, 1993, Beijing, China

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Preface

This proceedings contains the papers presented at the Third International Conference on CAD and Computer Graphics which will be held on August 23–26, 1993 in Beijing, China.

The response to the call for papers of this Conference was overwhelming. There are 227 papers from more than 20 countries and regions submitted to this Conference.

Paper selection was completed by the Program Committee of this Conference. The Committee was co–chaired by Professors Zesheng Tang and Jose L. Encarnacao. Every paper was reviewed by at least two committee members and was reviewed by a third referee if the two original reviews differed. Special effort was made to have committee members reviewing papers in their area of expertise. After the reviews were completed, the Program Committee had a meeting in January 13–14, 1993 in Beijing to discuss and decide the acceptance and rejection of reviewed papers. As the result, 166 papers were accepted for presentation at this Conference and publication in this proceedings.

All the papers in this proceedings are categorized in to the following 8 subject areas:

- Computer Graphics
- User Interface
- Computational Geometry
- Geometric Modeling
- Electrical CAD and CAT
- Intelligent CAD
- CAD Application
- Image Processing and Multimedia

The papers are compiled in accordance with the above group classifications and the sequence of their presentation at the Conference.

The basic goal of this Conference is to promote international scientific information exchange among scholars, experts, researchers and developers in the fields of CAD and Computer Graphics. I would like to express appreciation to the invited speakers for their interesting presentations on advanced research work and application in CAD and Computer Graphics. I world like to take this opportunity to repeat my warmest thanks to the authors of all the papers for their contributions to this Conference.

The large number of submissions exacerbated the normally tedious task of paper selections. The committee members and reviewers must be recommended for their extensive efforts.

I world like to express thanks to Professor Jose L. Encarnacao for his help in papers submissions and paper reviews and his guidance throughout the process for putting these papers together.

Before the publication of this proceedings, I world like to express sincere appreciation to Ms. Wei Yang for her extensive work in collection papers, sending the information into computer and verification of printing quality. In addition, my students, Mr. Zhigang Xiong, Weidong Min,

Yong Zhou and others have done a lot of work for the publication of this proceedings. Otherwise, it is impossible to publish this technical documentation.

Finally, I wish to express many thanks to the International Academic Publishers for the quality and appearance of this proceedings.

Zesheng Tang
Co-chairman of Program Committee
CAD / Graphics'93

Plate 1 A shaded image: the effects of heliotropism

(*Norishige Chiba, et al*)

Plate 2 A shaded image: the effects of dormancy break

(*Norishige Chiba, et al*)

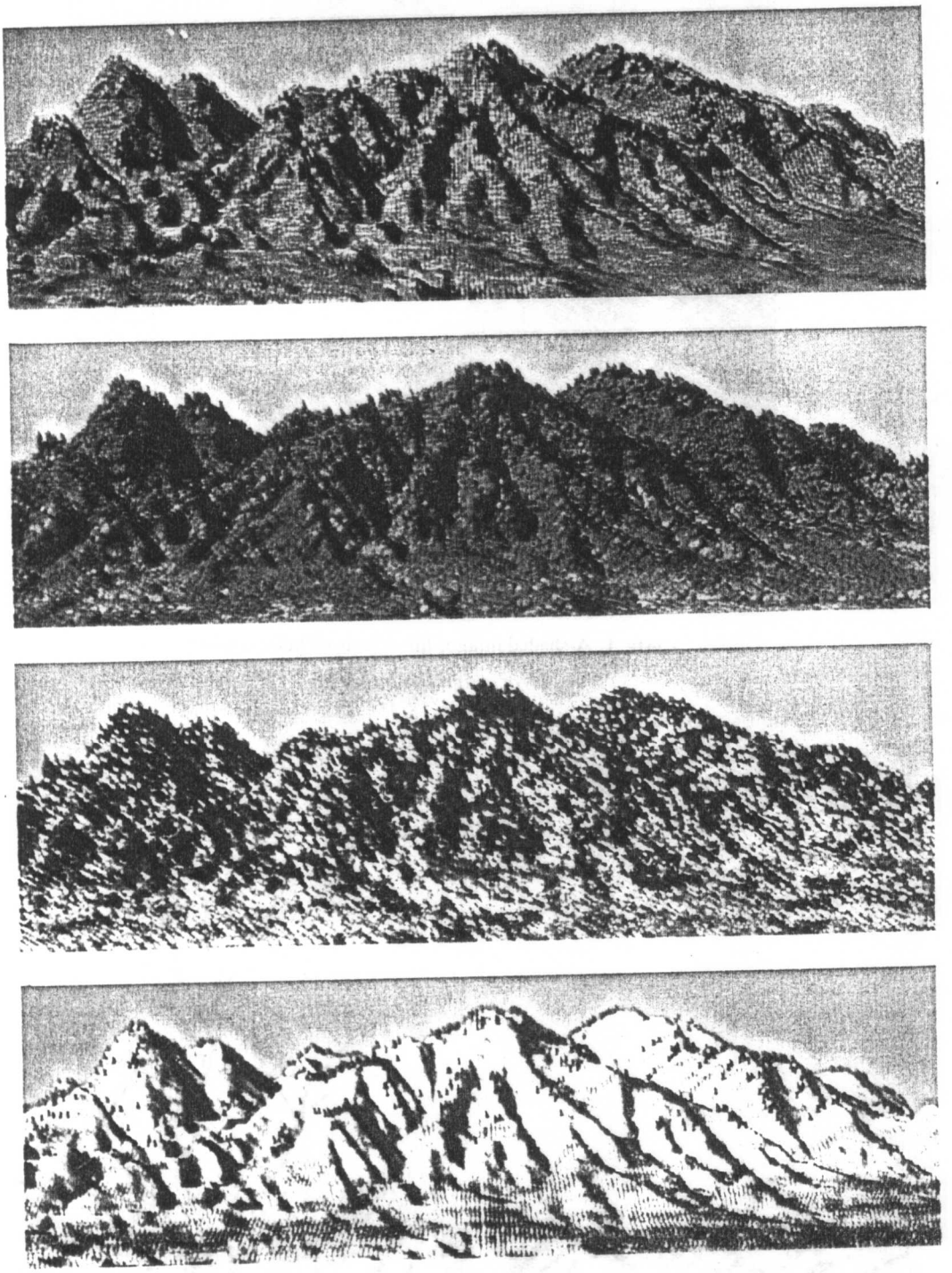


Plate 3 Simulation of seasonal mountain scenery:
in spring, summer, autumn, and winter (from top).

(*Norishige Chiba, et al*)

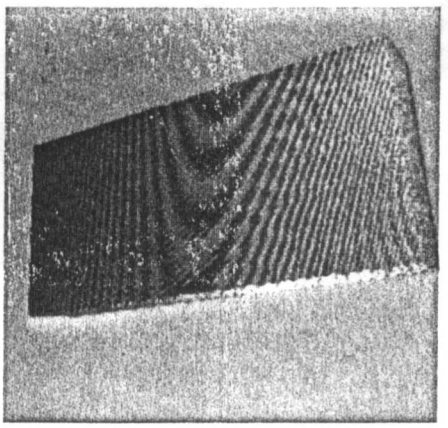


Plate 4 Coarse wood grain.

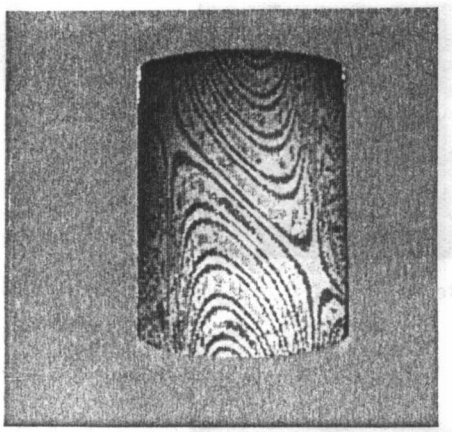


Plate 5 Peeled wood grain.

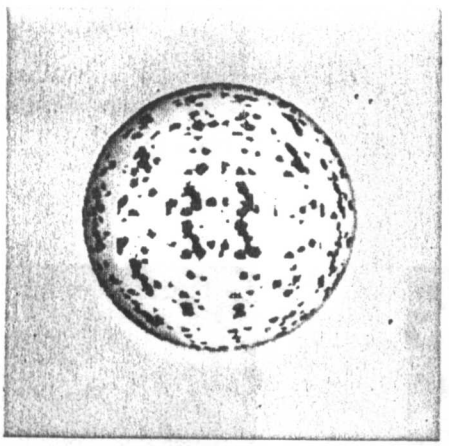


Plate 6 "Spot" texture.

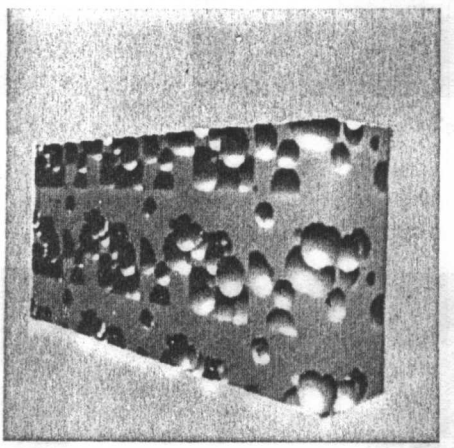


Plate 7 "Bump" texture.

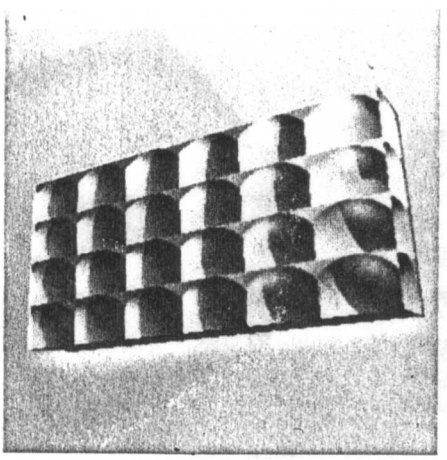


Plate 8 "Hollow" texture - waffle.

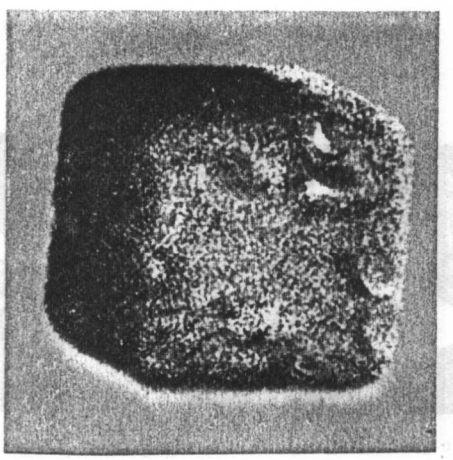


Plate 9 A lump of earth.

Plate 4 – 9 (*Buyun Zhang, et al*)

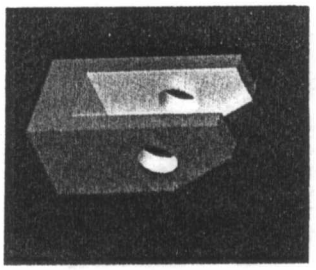


Plate 10

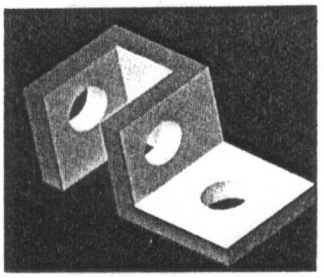


Plate 11

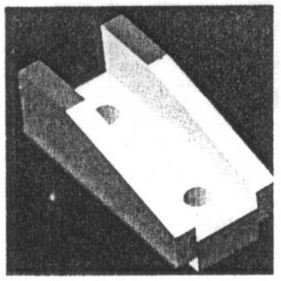


Plate 12

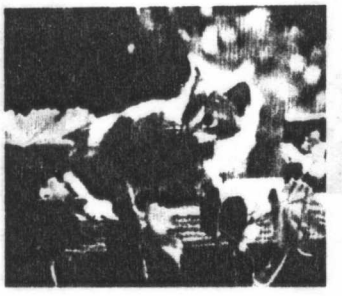


Plate 13

Plate 10 – 13 (*Han–Min Chen, et al*)

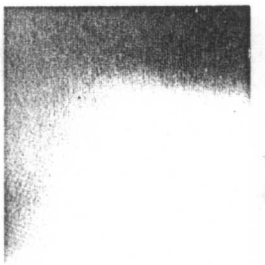


Plate 14

24 bit original image
of "color square".

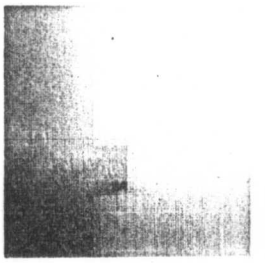


Plate 15

Dither quantization to
8 bits of "color square".

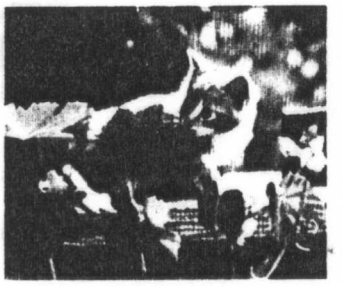


Plate 16

24 bit original image
of "cat".

Plate 17

Dither quantization to
8 bits of "cat".

Plate 14 – 17 (*Shaowu Cheng, et al*)

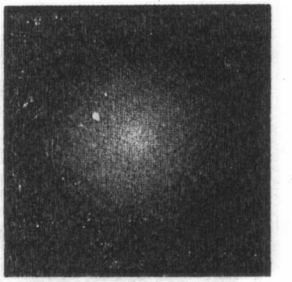


Plate 18

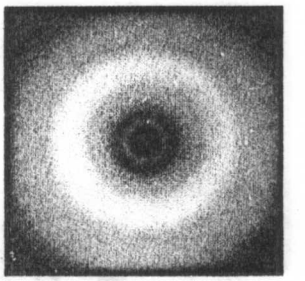


Plate 19

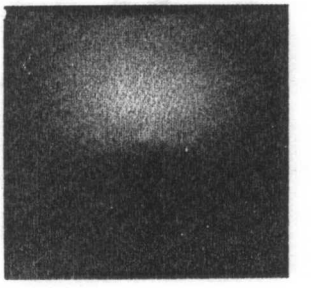


Plate 20

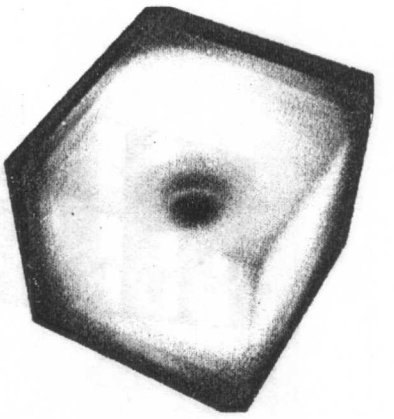


Plate 21

Plate 18 – 21 (*Jian Fang, et al*)

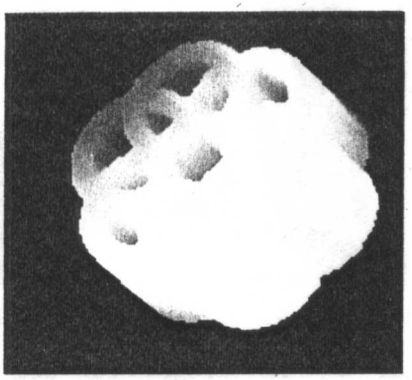


Plate 22 (*Shinine Yang, et al*)

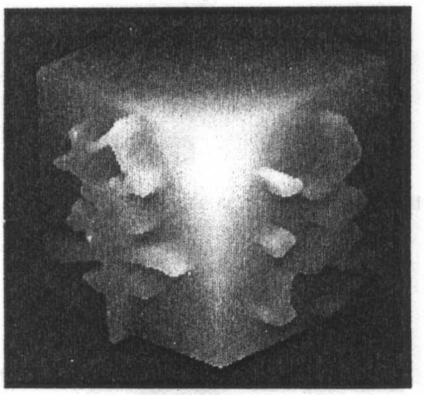


Plate 23 (*Shinine Yang, et al*)

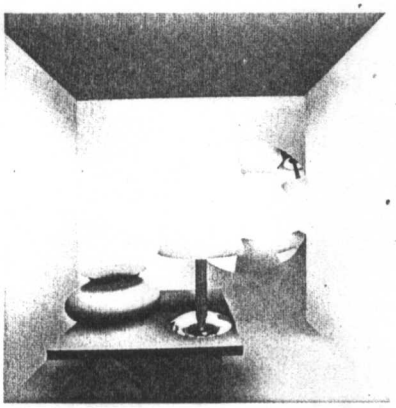


Plate 24 The indirect energy transfer via the mirrors is not considerd
(*Hujun Bao, et al*)

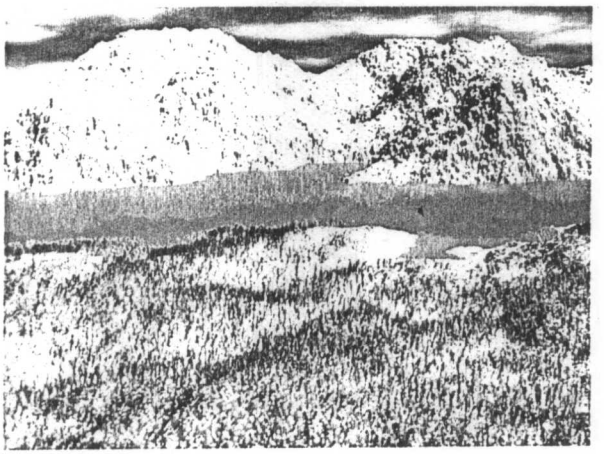


Plate 26 Terrain with grasslands
(*Nailiang Zhao, et al*)

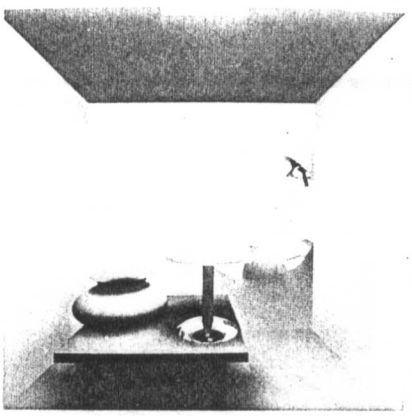


Plate 25 Fig. 5 The indirect energy transfer via the mirrors is considered
(*Hujun Bao, et al*)

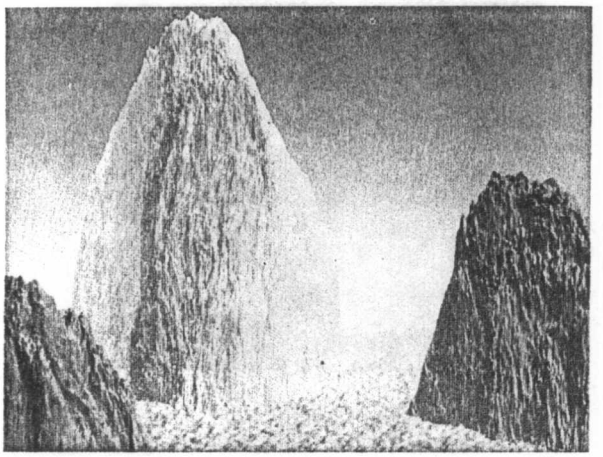


Plate 27 Islands in the sea
(*Nailiang Zhao, et al*)

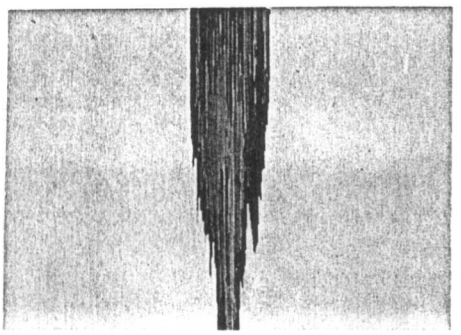


Plate 28 This image is the initial model of stalactites rendered by Xwindow based GV using 2 minutes on a SUN SparcStation 2. Here we use the Phong shading.

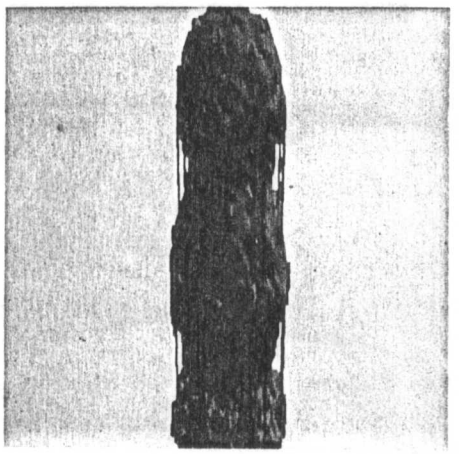


Plate 29 A stalagmite constructed by stacking piles of soil after erosion.

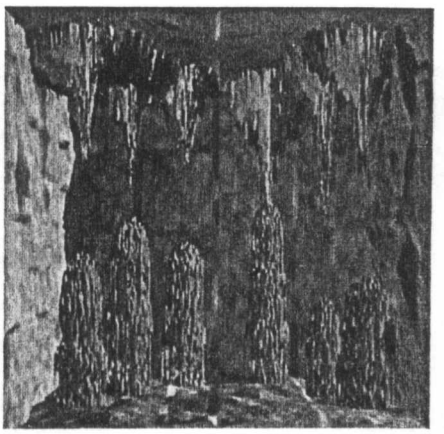


Plate 30 A completed cavern with stalactites and stalagmites. There are 140,000 triangles in this cavern model, and the rendering takes 20 minutes using GV by Phong shading.

Plate 28 – 32 (*Ouhyoung Ming, et al*)

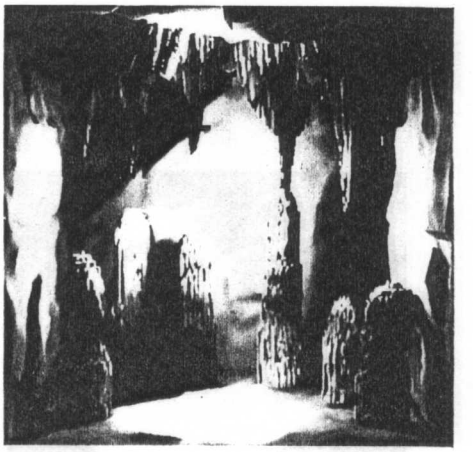


Plate 31 Similar to Fig. 9, but with radiosity illumination.

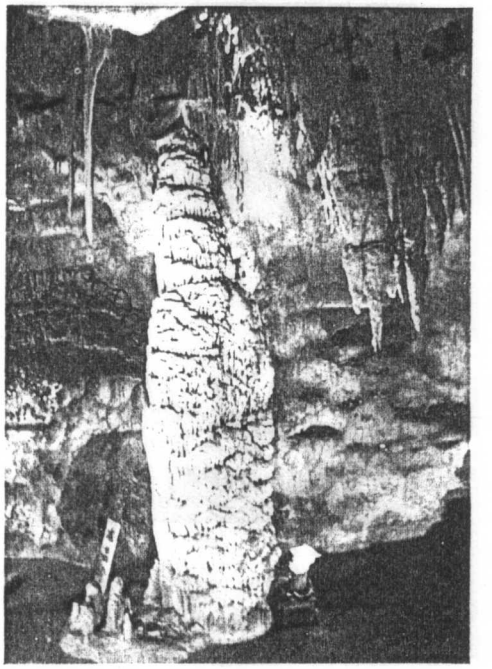


Plate 32 A photo taken from a cavern at Kweilin in China for the purpose of comparison.

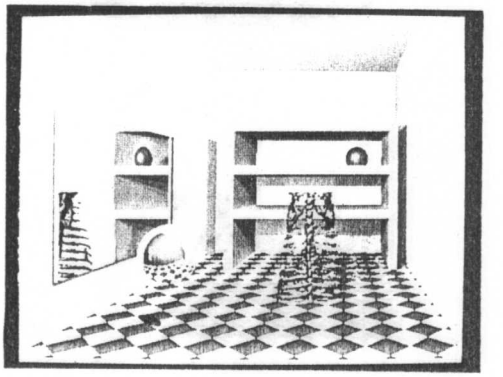


Plate 33 (*Zhilu Li, et al*)

Plate 34

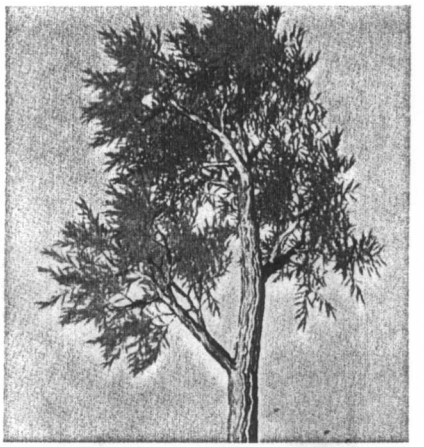


Plate 35

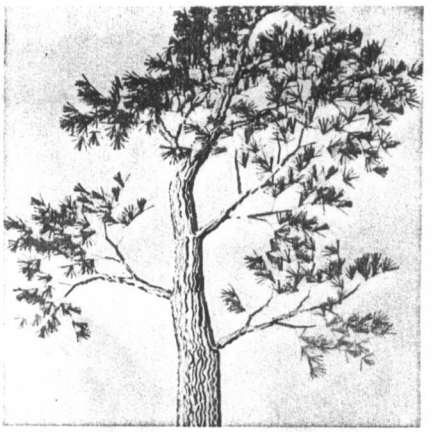
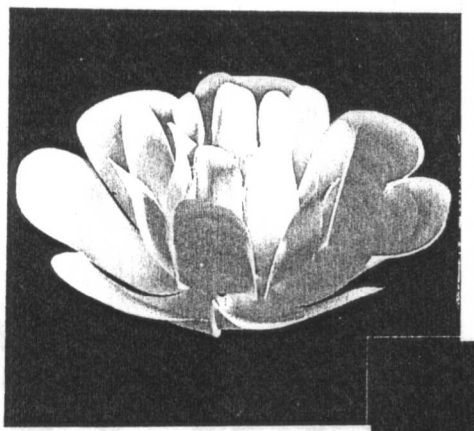
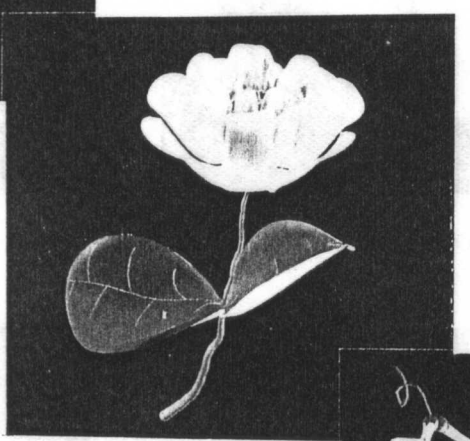


Plate 36





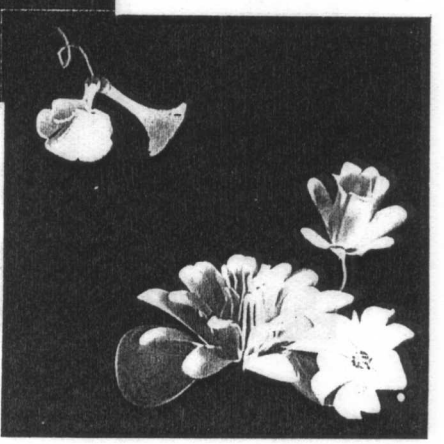


Plate 37 (*Hong Wu, et al*)

Plate 34 –36 (*Debin Zhang, et al*)

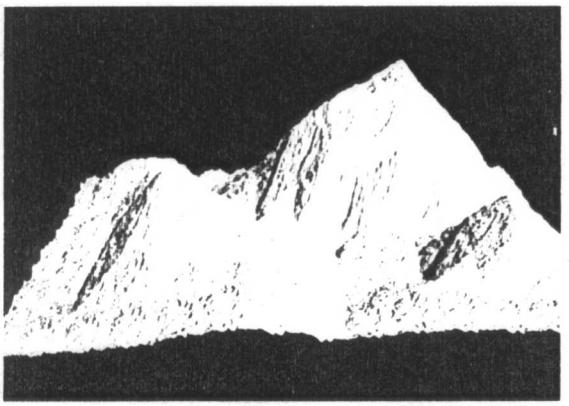


Plate 38 12×12 points, $MAXLEVEL = 2$

Plate 39 clouds, the same data as **Plate 38**

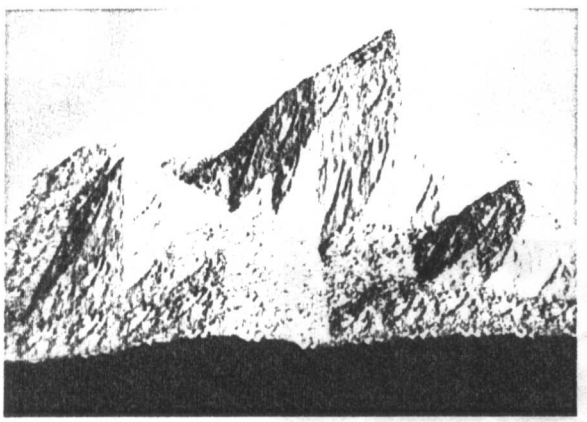


Plate 40 Mountain and clouds

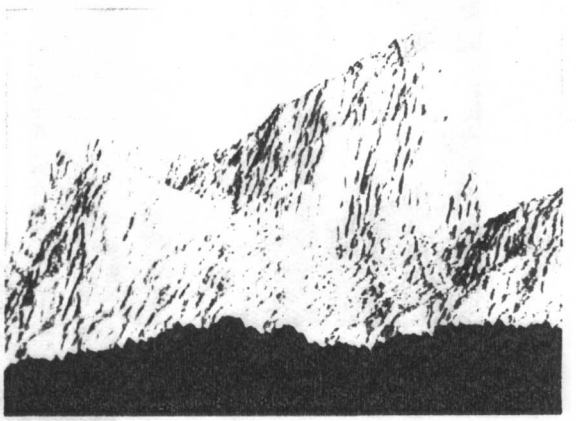


Plate 41 change $e(x, y)$ and $h(x, y)$ of **Plate 40**

Plate 38 – 41 (*Hongwei Tong, et al*)

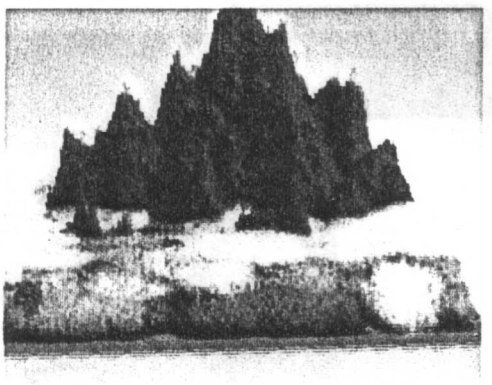


Plate 42 (*Lin Chen, et al*)

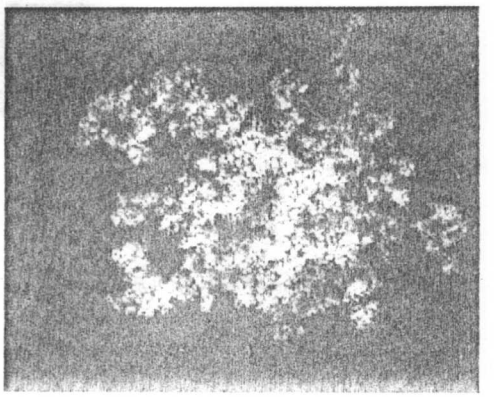


Plate 43 (*Lin Chen, et al*)

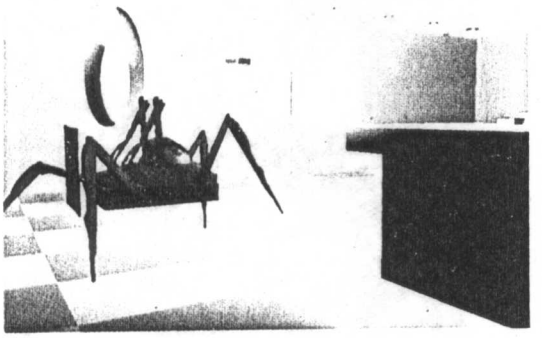


Plate 44 3D picture of film "Similarity"
(*Yuan Shi, et al*)

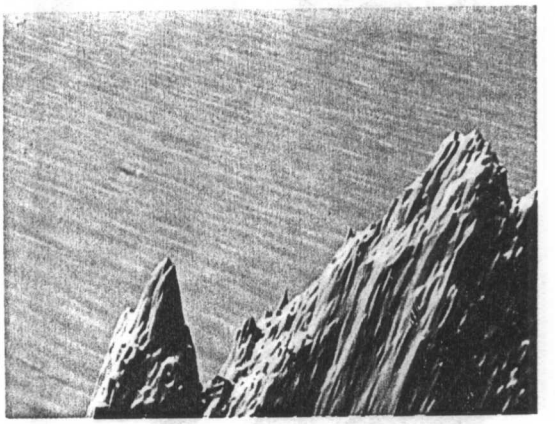


Plate 45 Example for imitation of natural scenes
(*Yuan Shi, et al*)

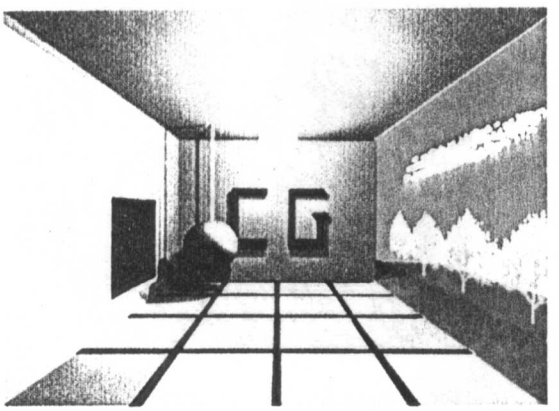


Plate 46 (*Xiaogang Jin, et al*)

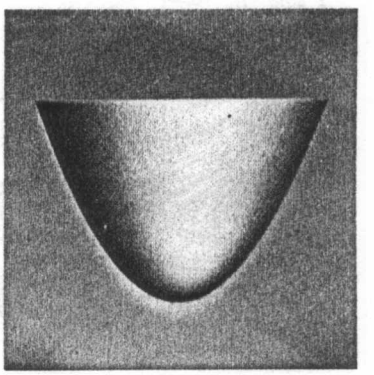


Plate 48
(*Binghua Chen, et al*)

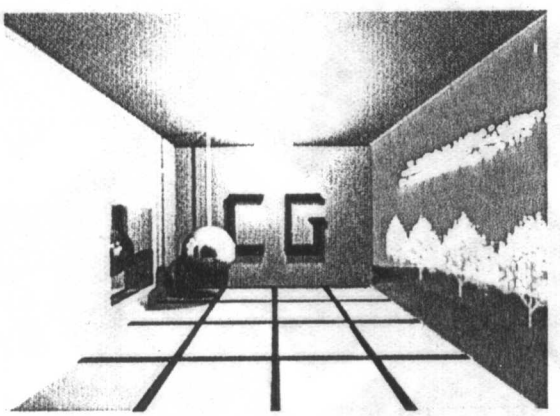


Plate 47 (*Xiaogang Jin, et al*)

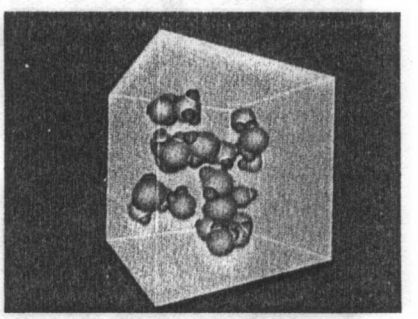


Plate 49 A Frame of Water Molecular Motion Simulation
(*Wenli Cai, et al*)

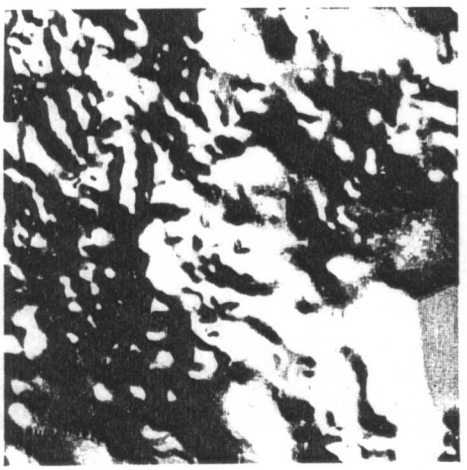


Plate 50 Relief shading applied to a digital terrain model

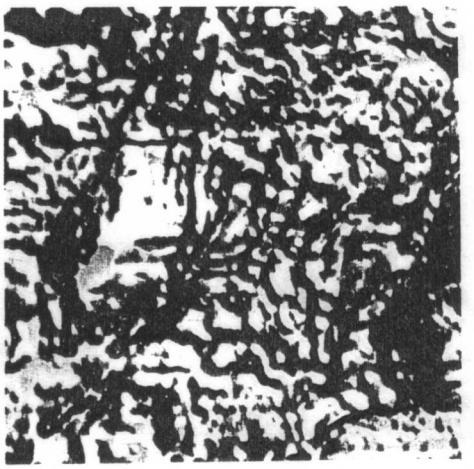


Plate 51 Relief shading applied to magnetic field data

Plate 53 Relief shading applied to a surface representation of a strange attractor arising from pendulum motion

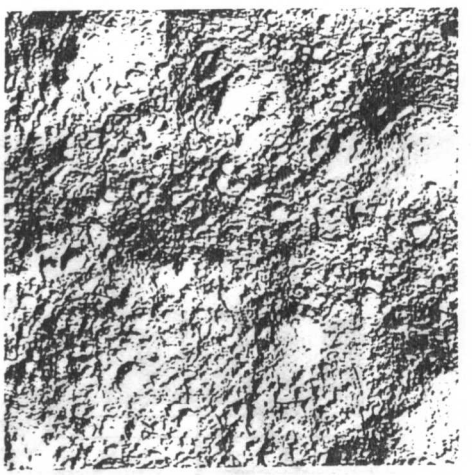


Plate 52 Relief shading of laser-scanned soil data terrain model

Plate 50 – 53 (*Philp K. Robertson, et al*)

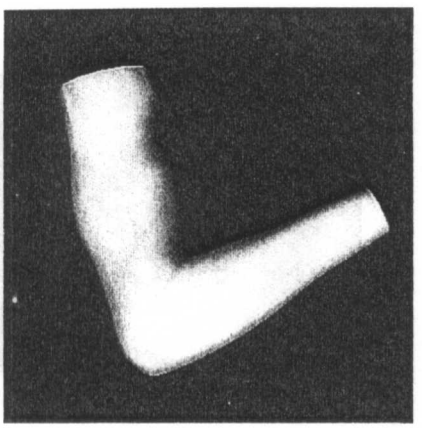


Plate 54 Shaded arm surface. (*Shen Jianhua, et al*)

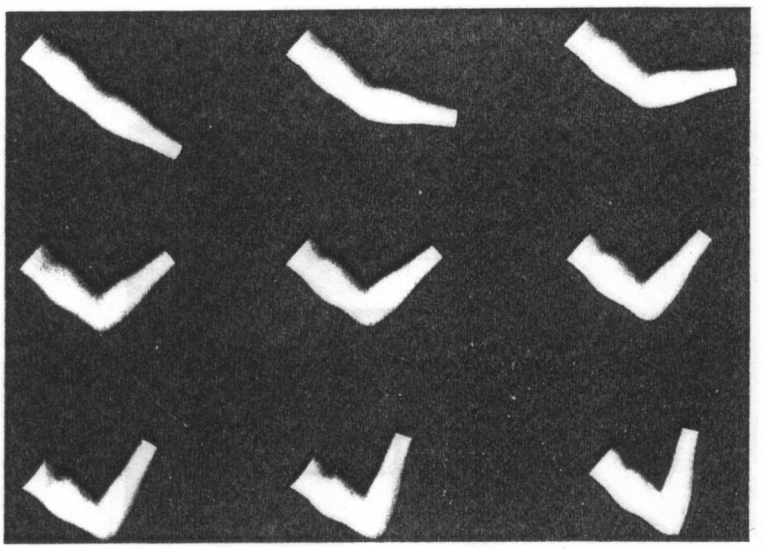


Plate 55 An arm animation sequence. (*Shen Jianhua, et al*)

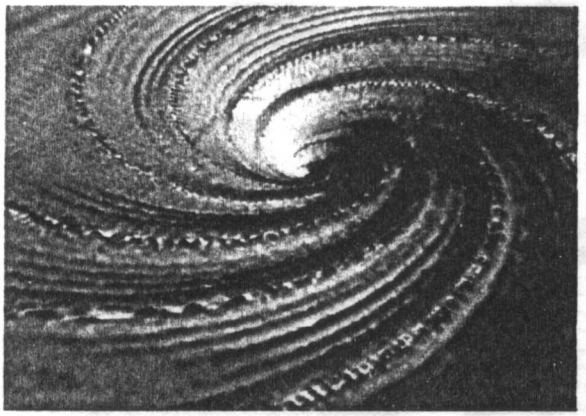


Plate 56 Streamline of a vortex.

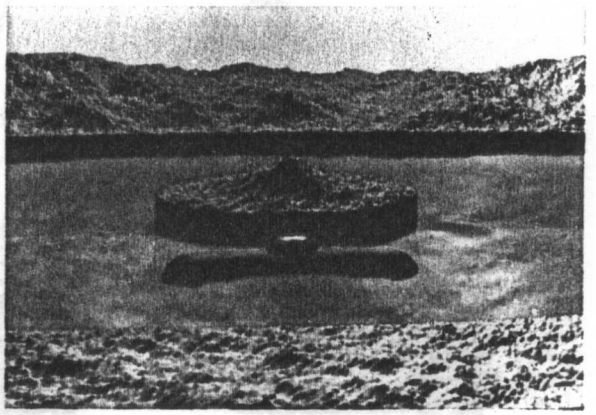


Plate 59 Side view of a flowing river (2)

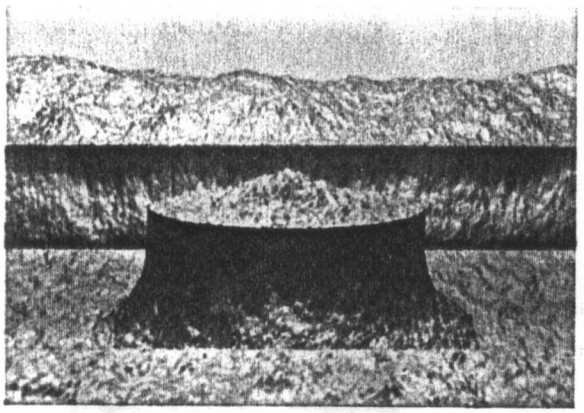


Plate 57 Side view of a river terrain

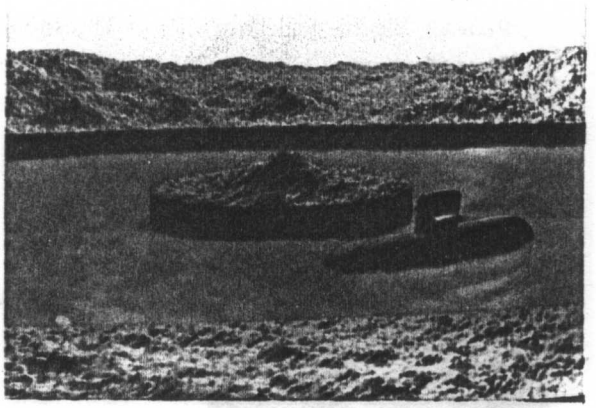


Plate 60 Side view of a flowing river (3)

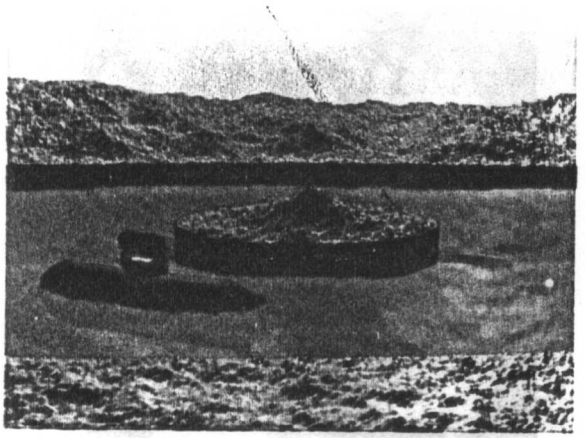


Plate 58 Side view of a flowing river (1).

Plate 56 – 60 (*Zenchung Shih, et al*)

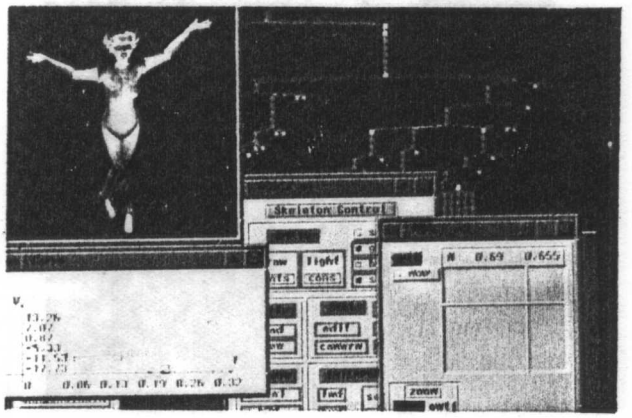


Plate 61 The dialog and display windows.(*Ronan Boulic, et al*)