日本コンピューター・グラフィックス'83

NICOGRAPH '83

知的生産性向上をめざすコンピューター・グラフィックス

Proceedings

CONTENTS

Nippon Computer Graphics '83

NICOGRAPH '83

Theme: The Intellectual Leverage through the Computer Graphics
Duration: December 1 (Thu.) – December 3 (Sat.), 1983
Site: Ikebukuro Sunshine City, Tokyo

Under the auspieces of: Nippon Computer Graphics Association
Supported by grants from: Nihon Keizai Shimbun, Inc.
Supported by: Ministry of International Trade and Industry
Ministry of Posts and Telecommunications
Ministry of Education
Ministry of Construction
Science and Technology Agency
National Land Agency
Nippon Telegraph and Telephone Public Corporation
Data Processing Society
Data Processing Development Association
Japan WCY Committee
With the cooperation of: Nikkei McGraw-Hill, Inc.
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EUROGRAPHICS

Time Table

Seminar

Dec.2(Fri.)

	A-1	B-1	C-1	D-1
9:30a.m. | 12:30p.m.	Computer Architecture for Computer Graphics SC/P • Dennis Allison P • Koichi Omura P • Masatsugu Kidode P • Tsutomu Temma	Digital Arts SC/S • John Strawn S • David Em S • Masahiko Inakage	Object-based Iconic Environments SC • Asao Ishizuka S • William T. Coleman III S • George Fanucci, Jr. S •	European Developments in Computer Graphics: Part 1 SC/S • Reijo Sulonen S • Paul ten Hagen S • Torsten Kjellberg S • Martti Mantyla S • Markku Tamminen
2:00p.m. | 5:00p.m.	A-2 Designing Iconic Interfaces: A Review of Three Systems SC/S • Aaron Marcus	B-2 Large Format Film Techniques SC/S • Nelson L. Max S • Arthur J. Olson S • CharlesE.Henderson	C-2 The Future of Video Games SC/S • Dennis Allison S • Tracy Larrabee S • Bernie De Koven	D-2 European Developments in Computer Graphics: Part 2 SC/S • Reijo Sulonen S • S.P. Mudur S • Ian Page S • Roger J. Hubbold

Special Evening Session

6:00p.m. | 8:00p.m.	**Special Evening Session (I):** Current Trends in Computer Graphics • Carl Machover	**Special Evening Session (II):** Computer Graphics Literacy Education at the Fashion Institute of Technology • David M. Geshwind

Seminar

Dec.3(Sat.)

	A-3	B-3	C-3	D-3
9:30a.m. | 12:30p.m.	Electronic Learning: Part 1 SC/S • Dennis Allison S • Robert Albrecht S • Bruce W.Pennycook S • Bernie De Koven	Biomolecular Application of Computer Graphics SC/S • Arthur J. Olson S • Michael L. Connolly S • Nelson L. Max	Computer Mapping SC/S • Geoffrey Dutton S • Bruce Q. Rado	Film and Video Production SC • Mitsuru Kaneko P • Tatsuo Shimamura P • Noboru Fujii P • Kinji Odaka
2:00p.m. | 5:00p.m.	A-4 Electronic Learning: Part 2 SC • Asao Ishizuka S • George M. White Video presentation by Xerox PARC	B-4 Three Dimensional Computer Animation SC/S • Garland Stern S • Lance J. Williams	C-4 Graphic Workstations and Workstation Architecture SC/S • Dennis Allison S • Robert D. Chew	D-4 Japanese CAE Technologies SC • Shinshiro Matsuoka P • Hirohiko Aya P • Takashi Tohyama P • Norio Okino

SC • Session Chairman **M** • Panel Moderator **P** • Panelists **S** • Speaker

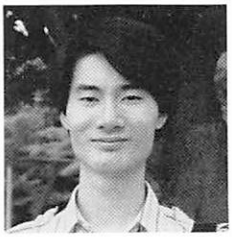
Seminar B-1

DIGITAL ARTS

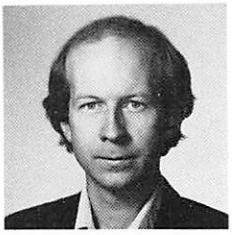
(Session Chairman: John Strawn)

David Em (U.S.A.): Aesthetics and Computer Techniques

Masahiko Inakage (California College of Arts and Crafts, U.S.A.)
: Sound and Visual Interaction



John Strawn (Stanford University, U.S.A.)
: Graphics-based Methods in Digital Sound Editing



Graphics-based Methods in Digital Sound Editing

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Sound, as in music and speech, is often represented in two domains. One, the *time domain*, shows the sound as it changes in time, much as a sound waveform might appear on an oscilloscope. The *frequency domain* shows sound broken into its spectral components, much as a prism breaks light into its composite spectrum. Precise control over the time domain is necessary for splicing sound and performing other operations in sound editing and mixing. Control over the spectral domain is useful for modifying sound and for research into auditory perception. In the past few years, sophisticated systems based on computer graphics have been developed to make editing in the time and spectral domains easier.

A generalized editor allowing access to both time- and frequency-domain representations has been developed for the Lisp machine by David Shipman of the Speech Voice Processing Group, Cambridge, Massachusetts. It combines the sophisticated window and menu systems available on the Lisp machine with the computational power of a Floating Point Systems FPS–100 array processor to provide a work station environment aimed at speech processing.

A number of time-domain editors have been developed at the Center for Computer Research in Music and Acoustics (CCRMA), Stanford. The first, by Loren Rush, is called EdSnd, and allows for detailed editing and control of a single sound recording. A more recent system, dpySnd by W. Schottstaedt, allows for multiple recordings to be manipulated at the same time. These editors are being used in research and especially in composition.

In the commercial world, the SynClavier synthesizer designed and built by New England Digital has an optional analysis/synthesis package which features a sophisticated menu-driven, graphics-based sound editor.

Handling and interpreting time-varying spectral representations of musical sound has until quite recently been complicated by the large amount of data: perhaps 100,000 floating-point numbers for each second of the original recording. At CCRMA, I have designed and implemented a window-based, menu-driven, graphics package for editing time-varying sound spectra. Some of the capabilities of the system are shown in the figures.

These systems will be discussed in this presentation; I will present as many graphics examples as possible. With experience gained using these systems, it is now possible to start to think about designing intelligent graphics-based editors for music. Such systems will have artistic application for composers and performers, and commercial applications in the completely digital audio recording studio of the not-too-distant future.

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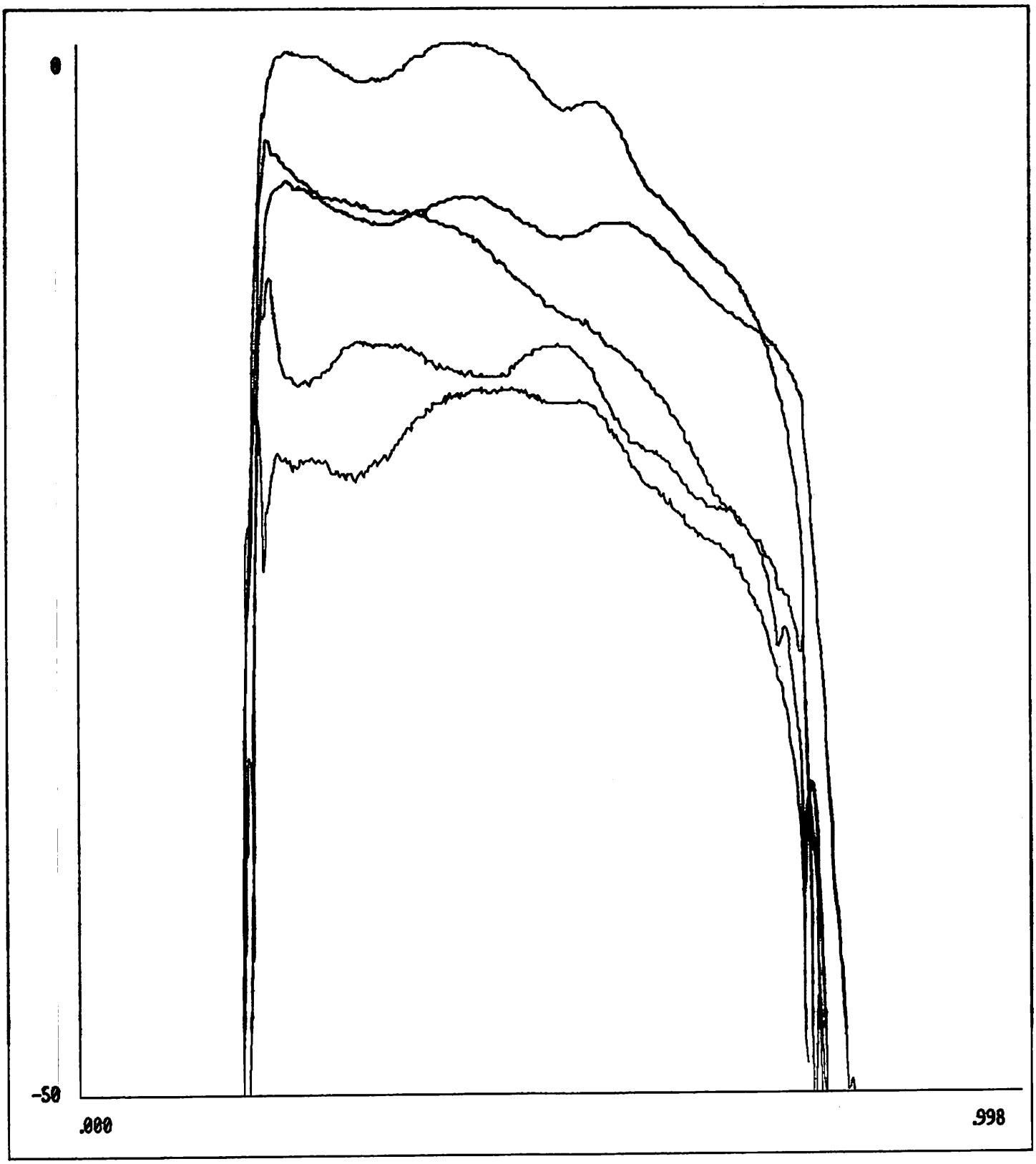

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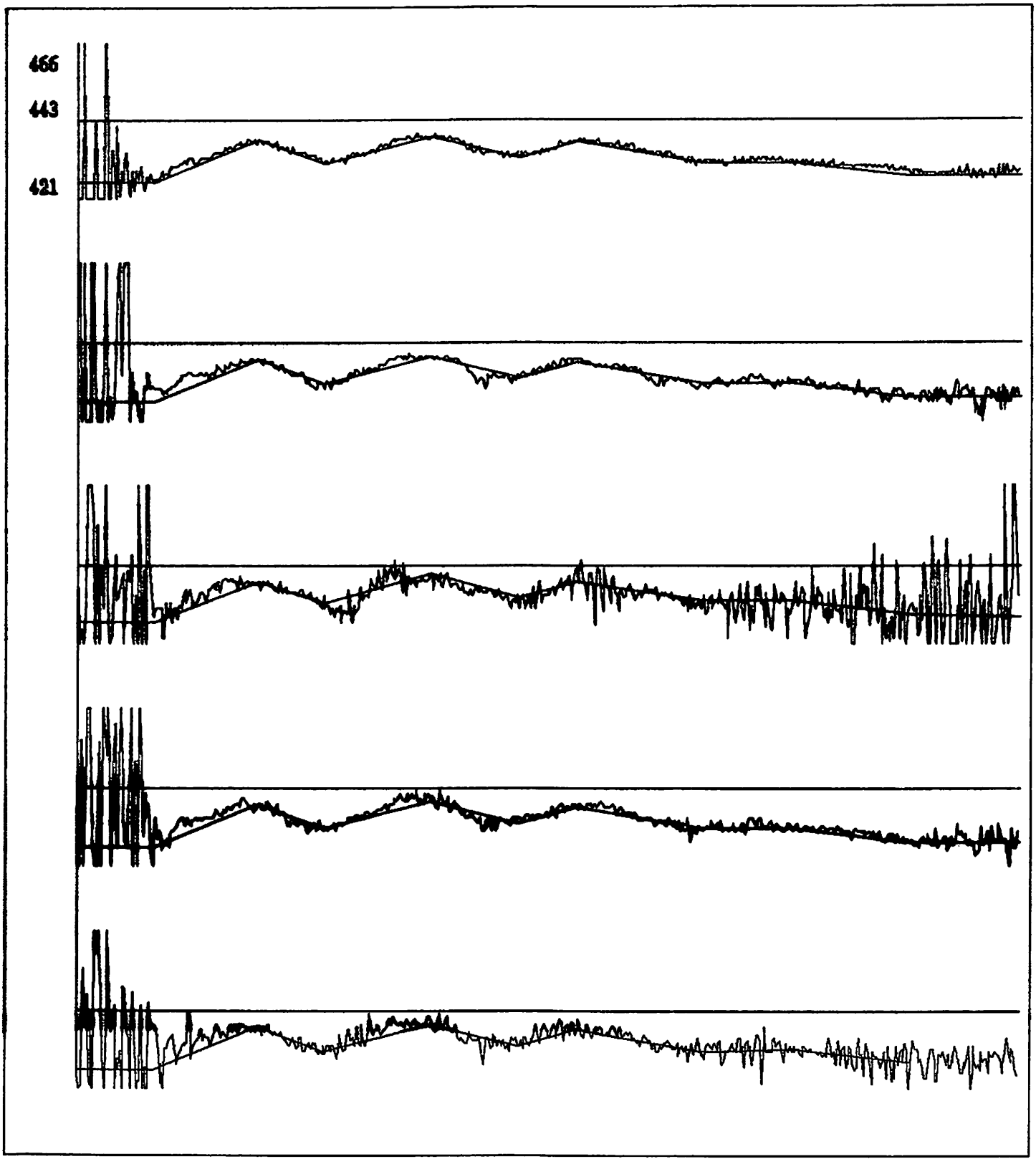

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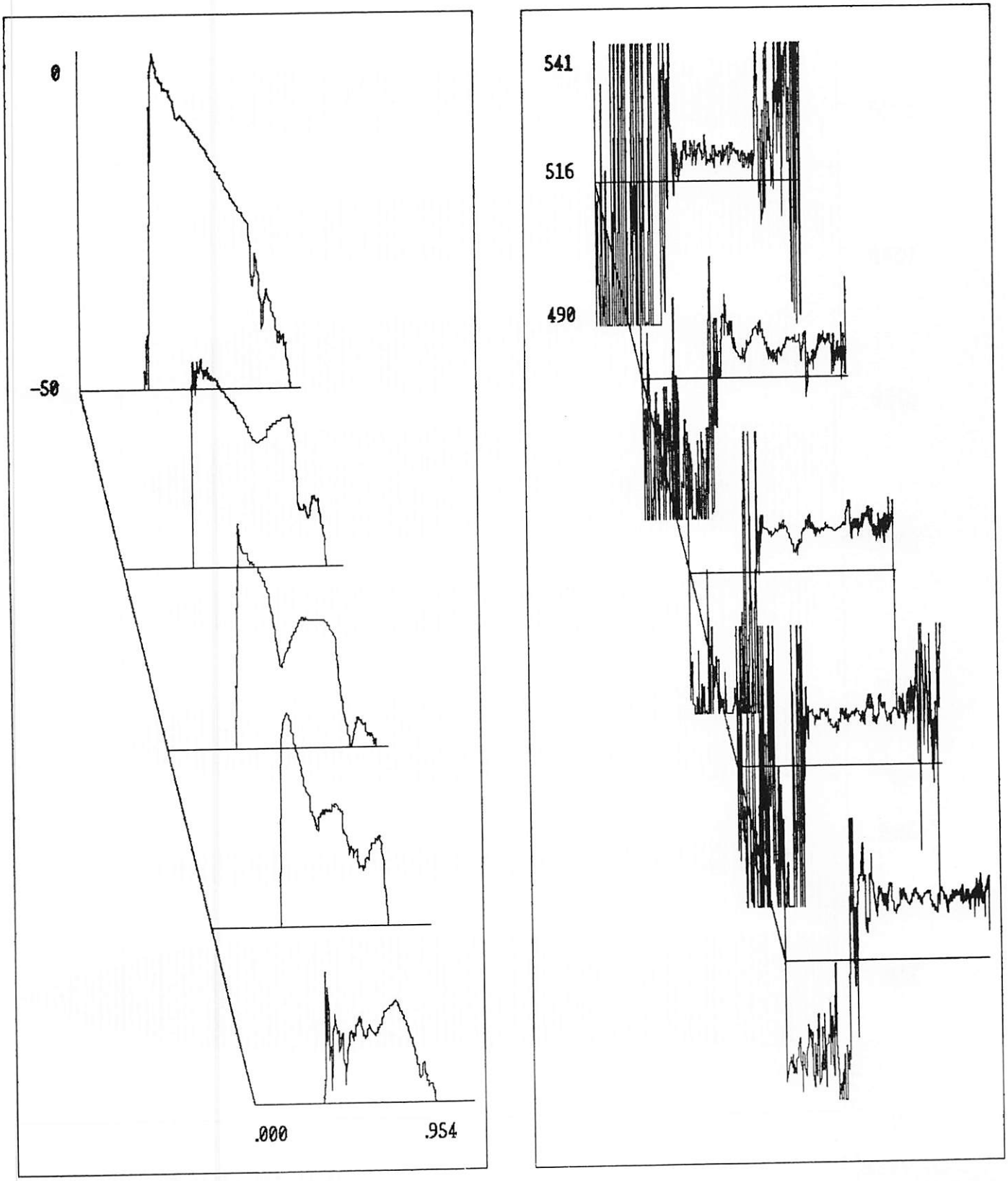
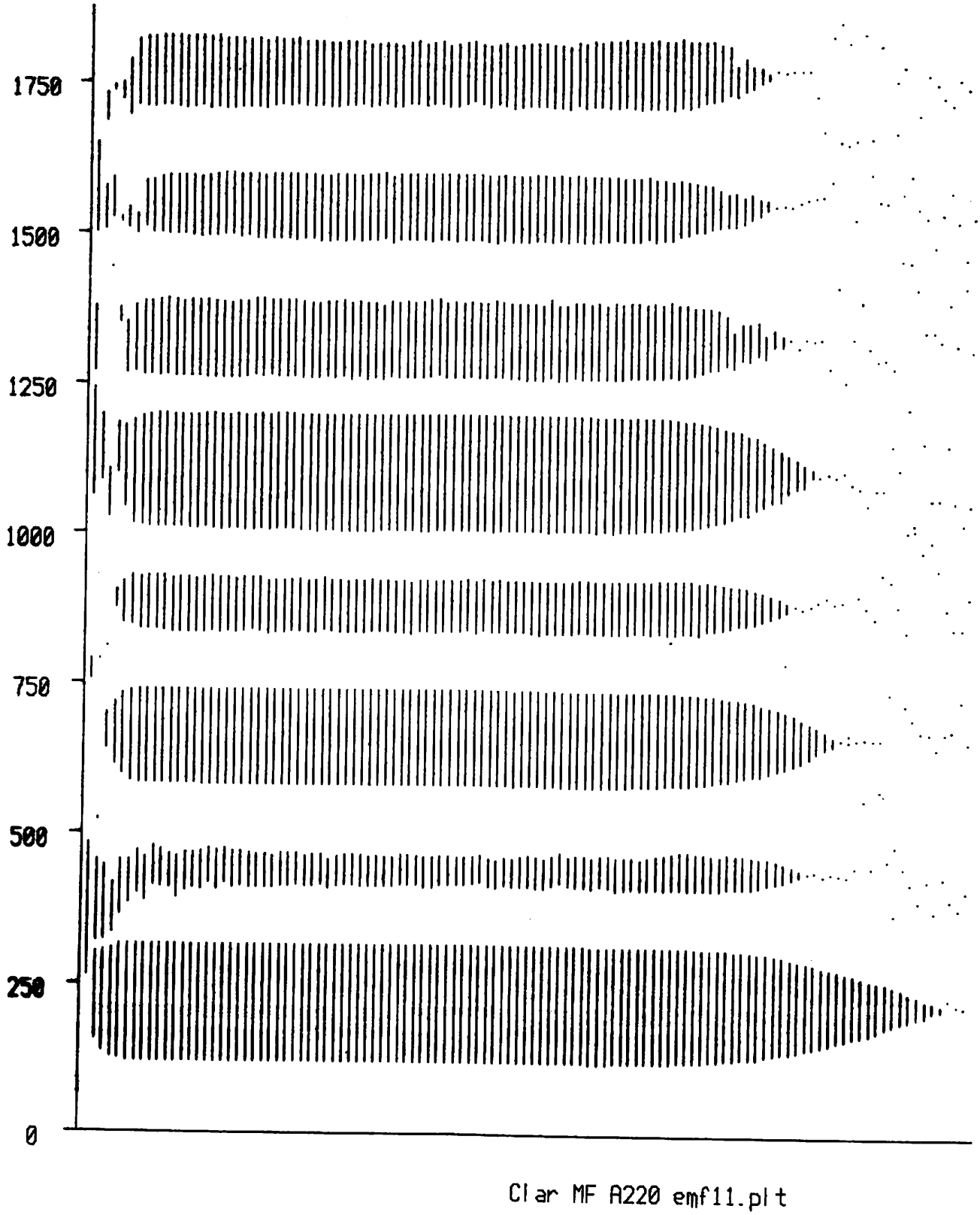


piano mezzoforte c5 Channels 1:5, time .000-.954 (0-50 dB, relative to file maximum)



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