Benton教授の回想

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Technical Contribution

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Rainbow Hologram

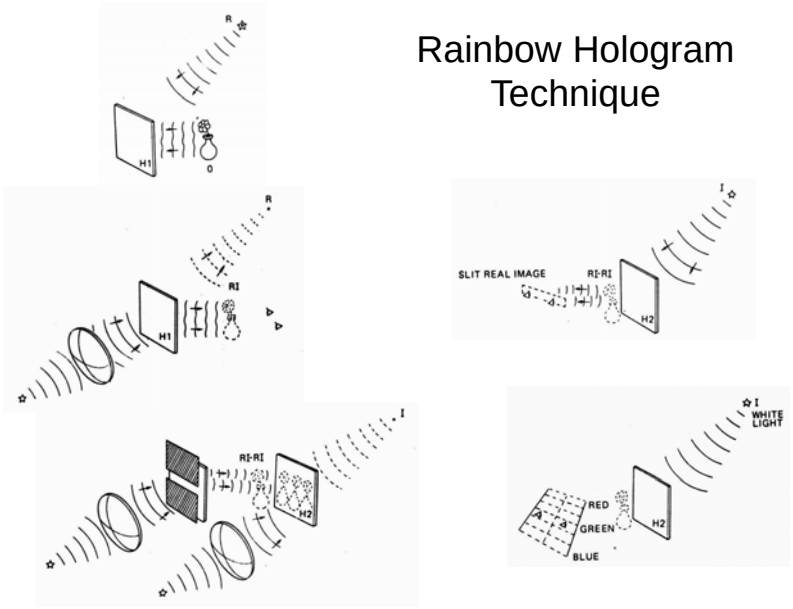
最初の発表論文

1969 OSA Annual Meeting
(Friday 24 Oct. 1969)
Chicago.Ill, USA

FE20. Hologram Reconstructions with Extended Incoherent Sources. STEPHEN A. BENTON, *Research Laboratories, Polaroid Corp., Cambridge, Massachusetts 02139 and Harvard University, Cambridge, Massachusetts 02138.*—A two-step technique for elimination of vertical parallax in hologram viewing has resulted in significant reductions of information content, allowing relaxations of the reconstruction illumination-coherence requirements. The subject for a second hologram is a real image of the scene, projected by a narrow horizontal strip of a conventional hologram. The second hologram is illuminated to reconstruct a real image of the first hologram, so that the entire field of view becomes visible when the eye is positioned at the image of the strip, and correct horizontal parallax is presented. The original point-illumination source can then be replaced with an incoherent vertical line source to produce a continuum of vertically displaced strip images. The eyes may now move throughout a large volume while viewing an undistorted, speckle-free, three-dimensional image that displays normal changes of horizontal perspective with viewing position. A particular arrangement produces hologram image structures that are suitable for transmission on a 525-line television raster that has increased resolution in the horizontal direction only. Another such hologram yields white images over a considerable depth of field when it is illuminated by a fluorescent lamp without auxiliary optics. (13 min.)

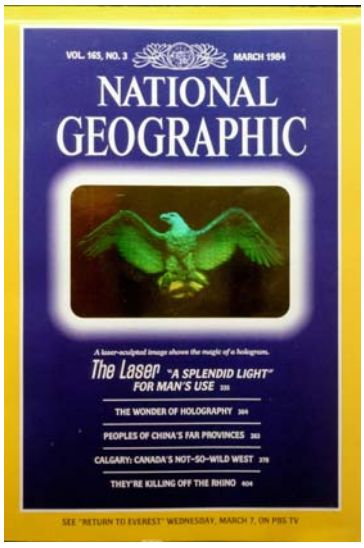
S. A. Benton: J. Opt. Soc. Am. **59**, 1545A (1969)

Rainbow Hologram Technique

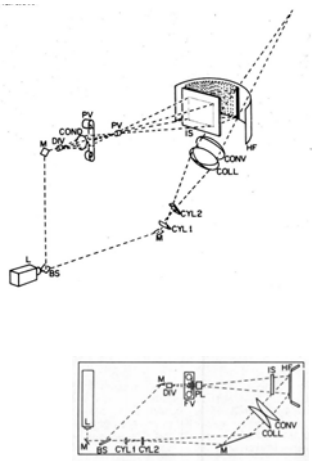


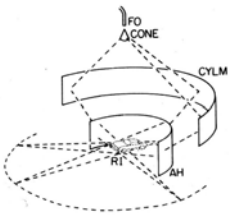
S.A. Benton: *Applications of Holography and Optical Data Processing*, pp. 401 (Pergamon Press, 1977)

Rainbow Hologramの応用



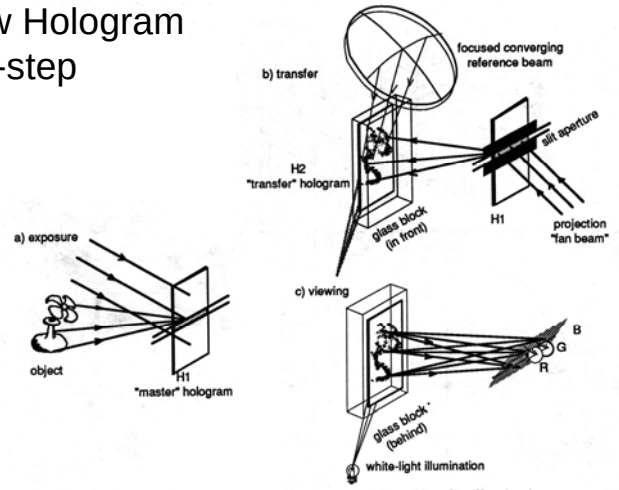
Alcove Hologram Technique





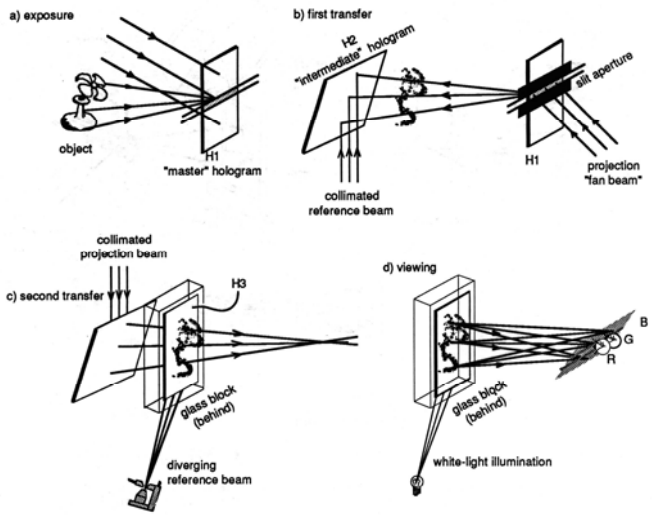
S.A. Benton: Proc. SPIE, **761**, 53 (1987)

Edge-Lit Rainbow Hologram 2-step

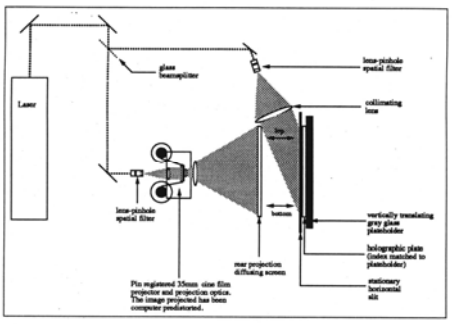


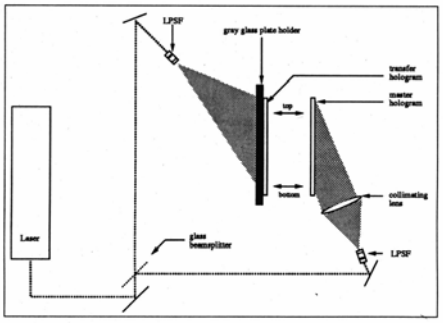
S.A. Benton, S.M. Birner, A. Shirakura: Proc. SPIE, **1212,** 149 (1990)

Edge-Lit Rainbow Hologram 3-step



Ultragram Recording



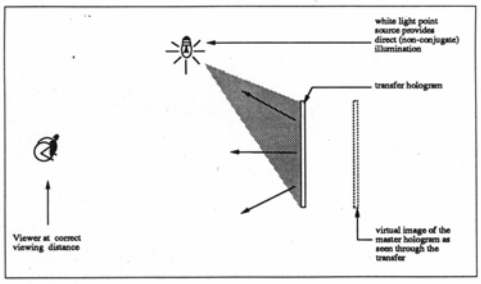


Two-step mastering

Two-step transfering

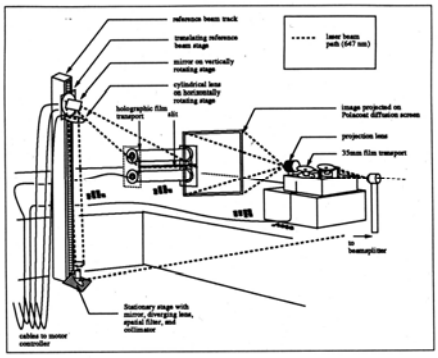
M.W. Halle, S.A. Benton, M..A. Klug, J.S. Underkoffler: Proc. SPIE, **1461**, 142 (1991)

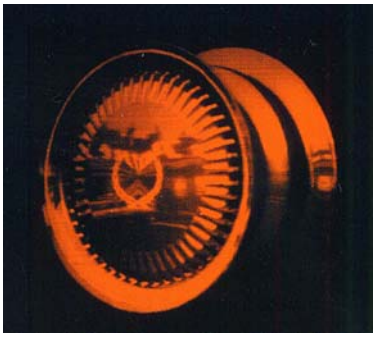
Ultragram Reconstruction



Direct-illumination

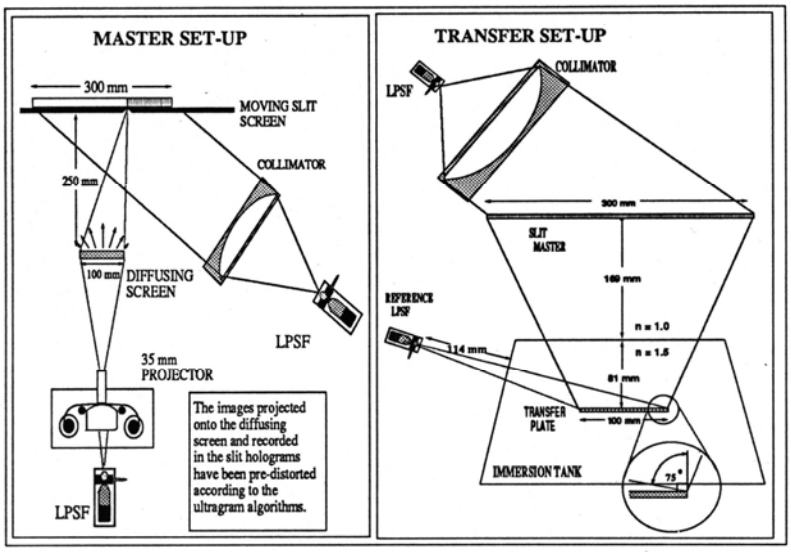
Ultragram Practical Setup





Practical setup used to expose Large Chevrolet Wheel

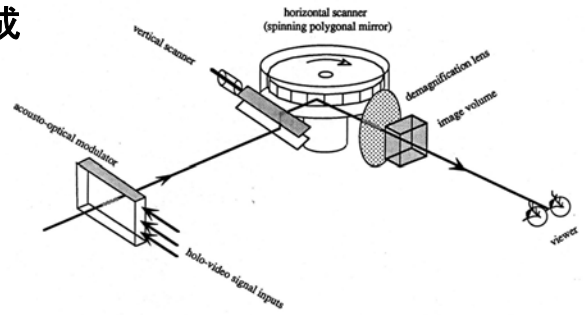
Edge-Lit Ultragram



W.J. Farmer, S.A. Benton, M.A. Klug: Proc.SPIE, **1481**, 215 (1991)

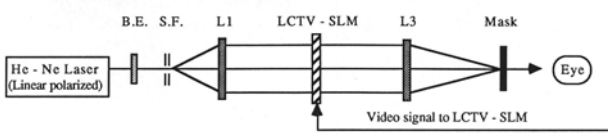
Electroholography
基本構成

Benton



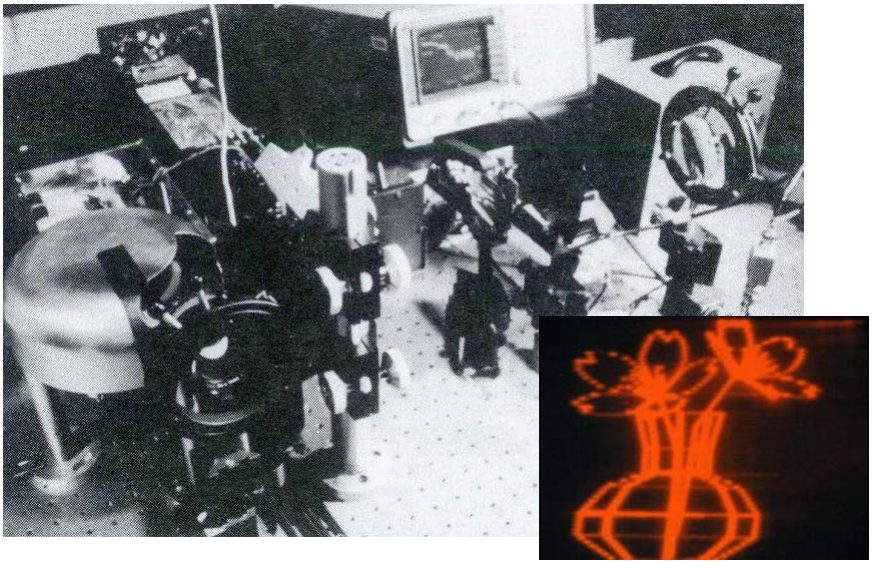
S.A. Benton: SPIE Institute of Holography, **IS 8**, 247 (1991)

Hashimoto

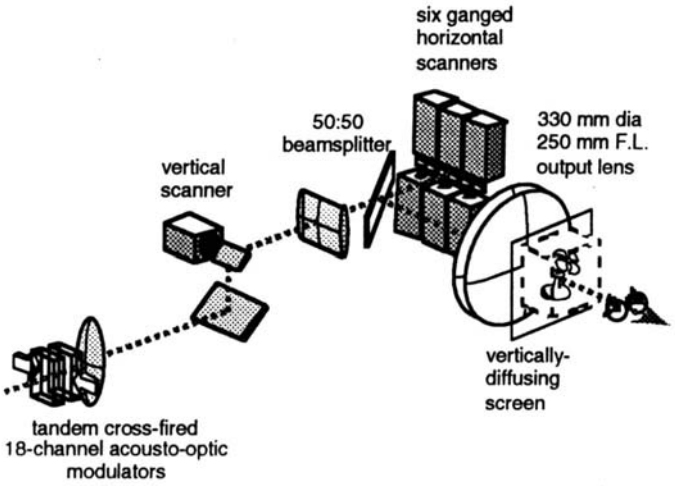


N. Hashimoto, K. Kitamura and S. Morokawa: Proc. SPIE, **1461**, 291-302 (1991)

Benton装置の外観と再生像



Electroholography Mark II



S.A. Benton: Proc. TAP International Symposium, S-3-1-3 (1993)

8－1 表　MIT の電子ホログラフィー装置の変遷

完　成	基本型 (1990)[39]	MARK I (1992)[40]	MARK II (1993)[41]
干渉縞データ	2 MB	6 MB	36 MB
チャンネル数	1	3	18
視域	15°	15°	30°
カラー	単色 (赤)	フルカラー	単色 (赤)
水平方向サンプル数	32 k	32 k	256 k
水平方向走査速度	2750 kHz	2750 kHz	150 kHz
垂直走査線数	64	64	144
像の大きさ ($W \times H \times D$)	36 × 24 × 50 mm³	36 × 24 × 50 mm³	150 × 75 × 150 mm³

辻内順平：ホログラフィー, pp. 196 (裳華房, 1997)

Benton in Ulyanovsk and Moscow

USSR

Aug. 1978


ВОДКА

Holographic Movie（NIKFI)

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Visit to Kiev, USSR

Sept. 1989


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