

# **Relationship of the old and new knowledge in printing technology education of today: the examples of retrospective analysis**

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**Introduction**

**Some dialectic issues of the technology development**

**Moving forces and trade offs within the step-to-step technology evolution**

**Photomechanical process**

**Electronic reproduction**

**Computerized print data processing**

**Conclusions**

# The challenges of graphic education.

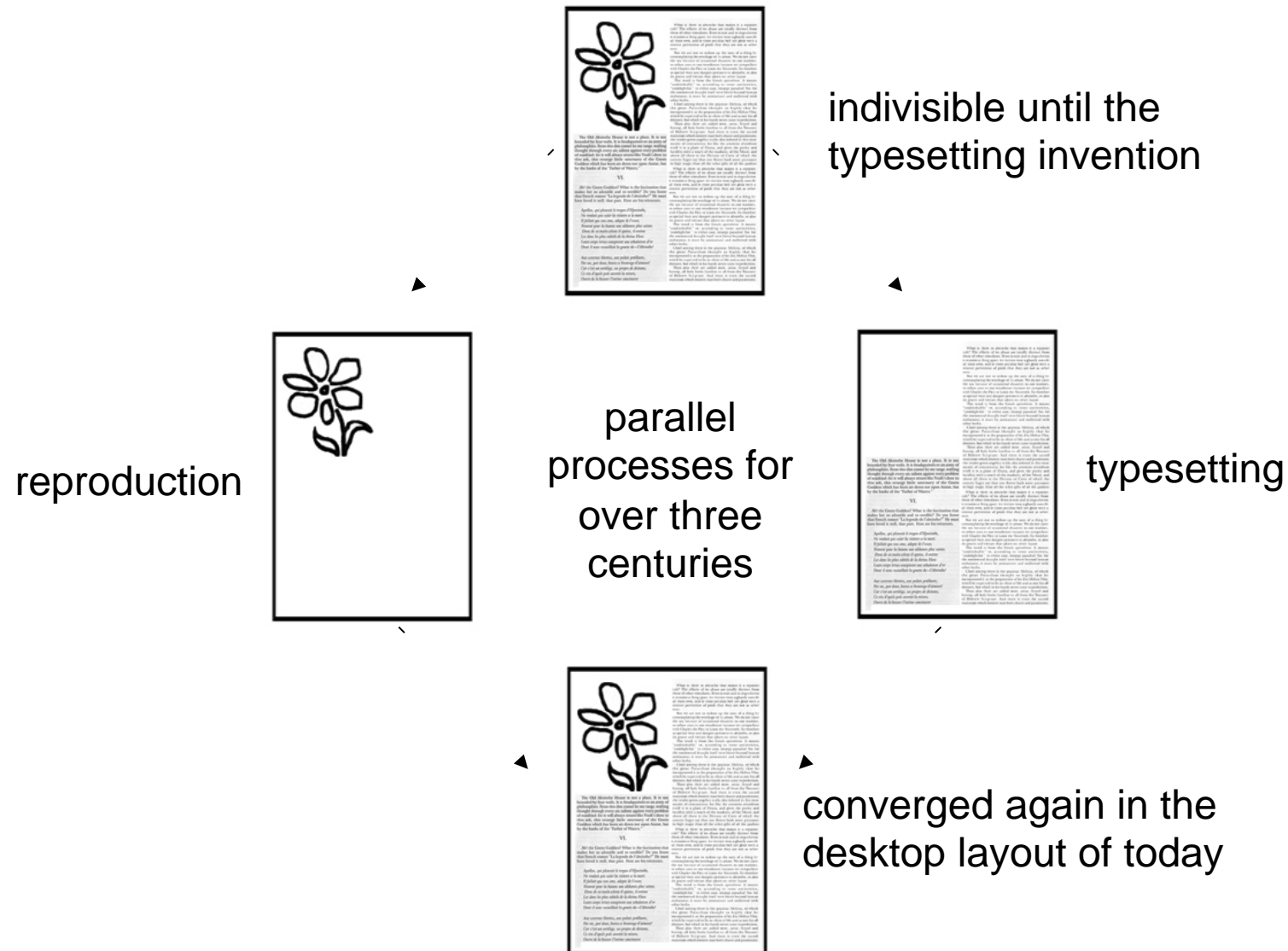
Optimal combining the content related to material and informative component of print product.

Taking into account the print product general appealing to cognitive and aesthetic perception of a customer.

Embracing the whole spectra of printing technology applications.

Withstanding the dilettantish myths and misconceptions.

# From the manual engraving of a page print form to desktop



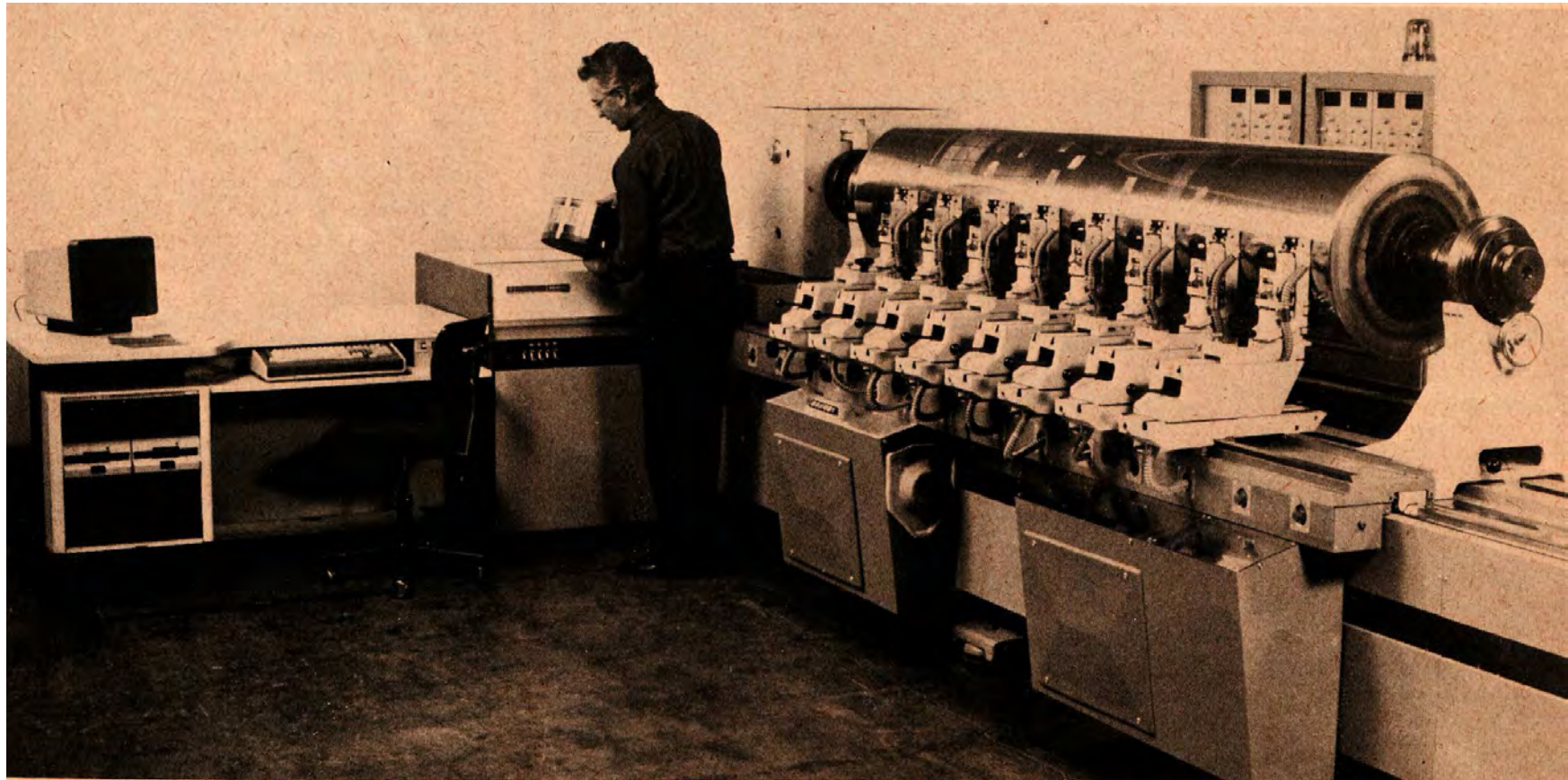
the pasted-up originals



Helioklischograph



# Helio Data Processing system – HDP of Hell (1978)



# The stages of image processing after the times of manual engraving:

photomechanical processes starting from 1880ies;

electronic reproduction

*analogue signals*

*as of 1950;*

*digital signals*

*as of 1970;*

computer processing systems

*closed (CEPS)*

*as of 1980;*

*open (PostScript based)*

*as of 1990.*

# From manual engraving to photomechanical process

**Basic reason:** excluding the need in artistic services of engraver for photographs reproduction

**Trade off:** destroying the image fine detail by halftone dots

**engraved**



**halftoned**





# From photomechanical to electronic reproduction

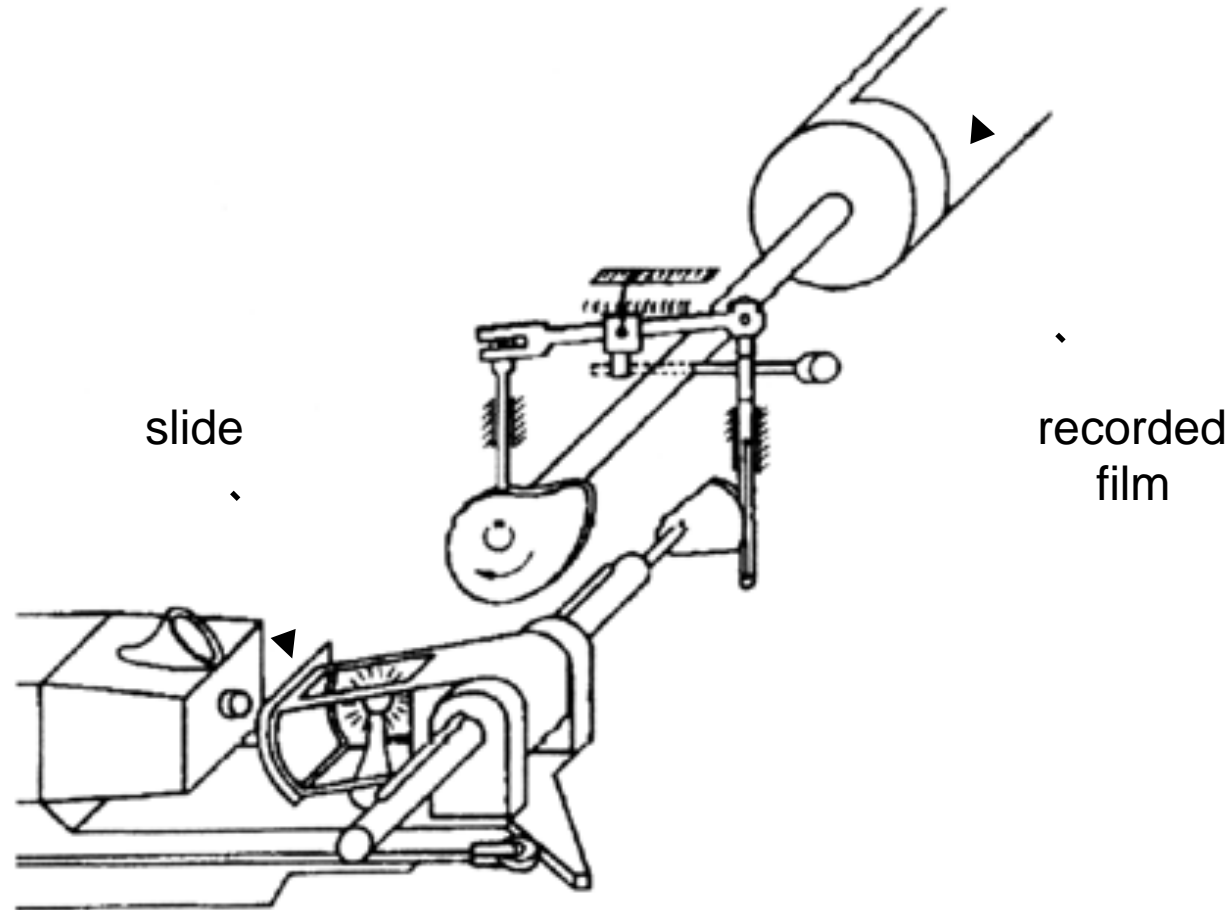
## **Basic reason:**

presentation of an image data by the electric signal for the flexible color correction to replace the material wastage masking techniques and manual retouching.

## **Trade offs:**

- lack of selective, for the given image area, correction;
- destroying the continuous image onto, at least, discrete lines by the scanning;
- problems of varying the image size on a drum;
- need of the control visualization.

# Fixing the slide on a swaying frame in Hell's ChromoGraphs and Crosfield's Diascans of 60ies





# One of the first “soft” proofing systems – Hell’s Chromaskop (1974)



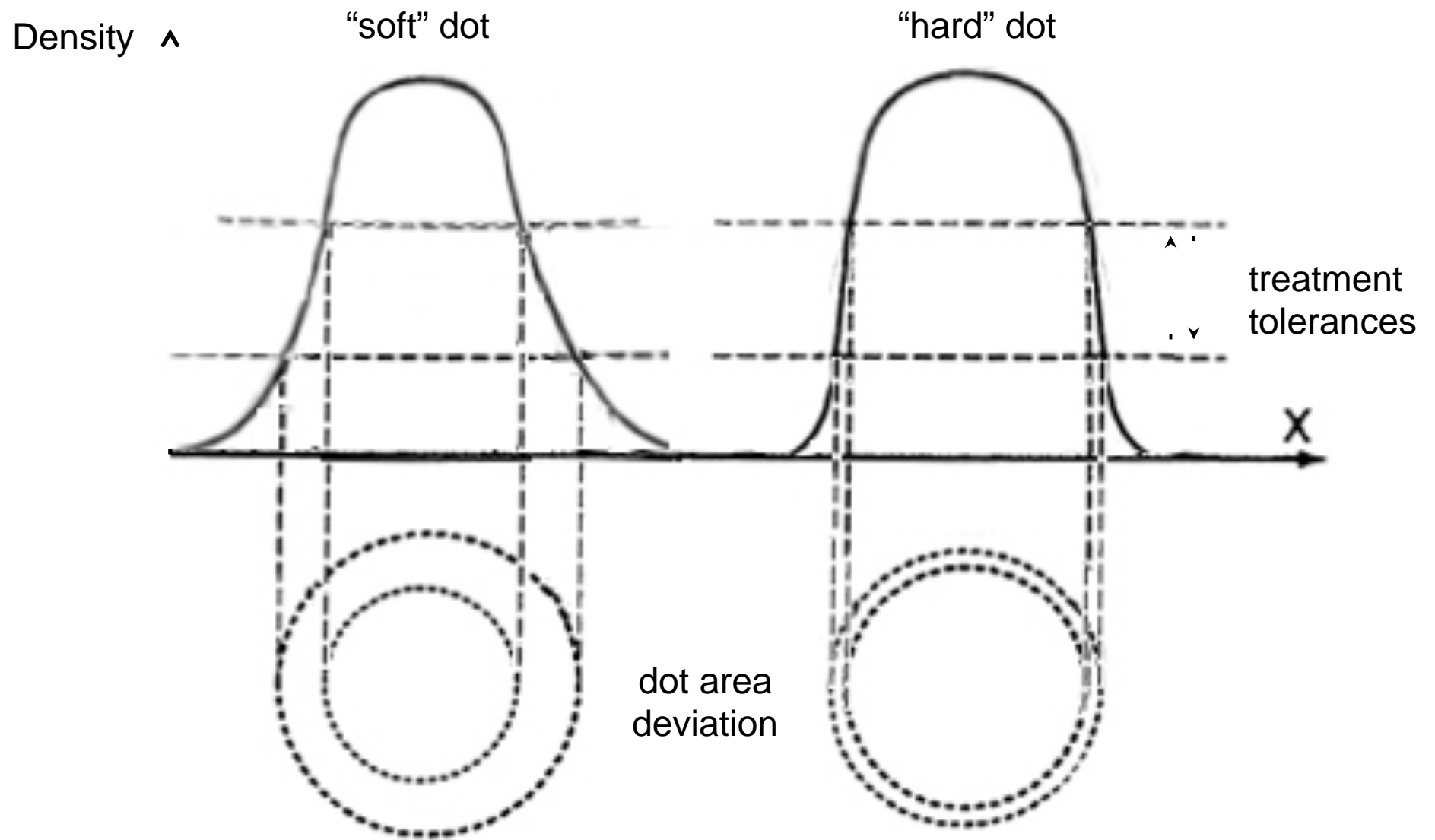
From the use of photomechanical screening effect to the electronic halftoning

**Basic reason:**

providing the robust connection of image signal and halftone dot area.

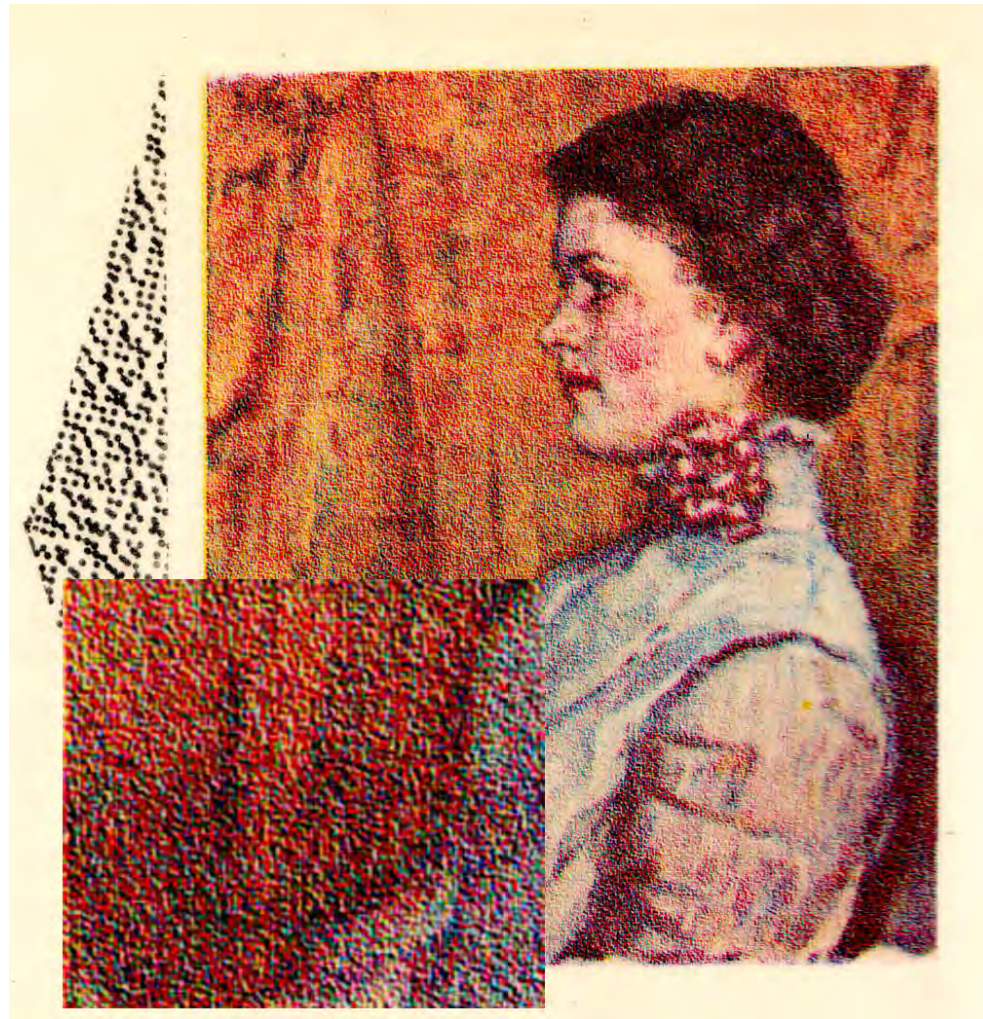
**Trade offs:**

- problems with the screen rotation to avoid the moire;
- discrete dot area variation dependant on the recording resolution.



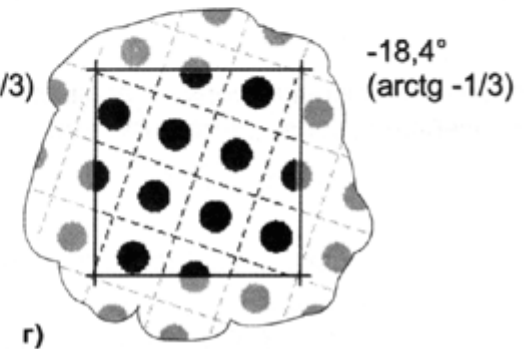
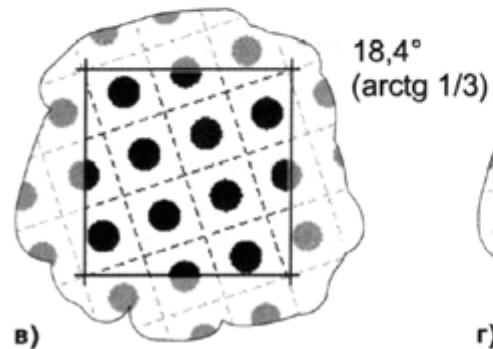
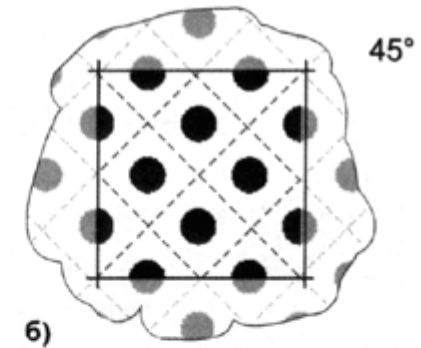
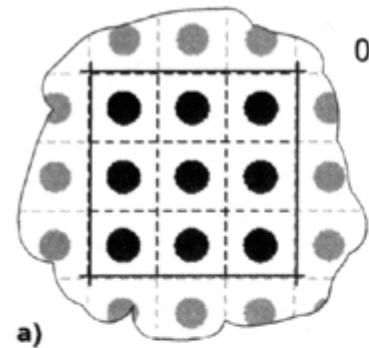
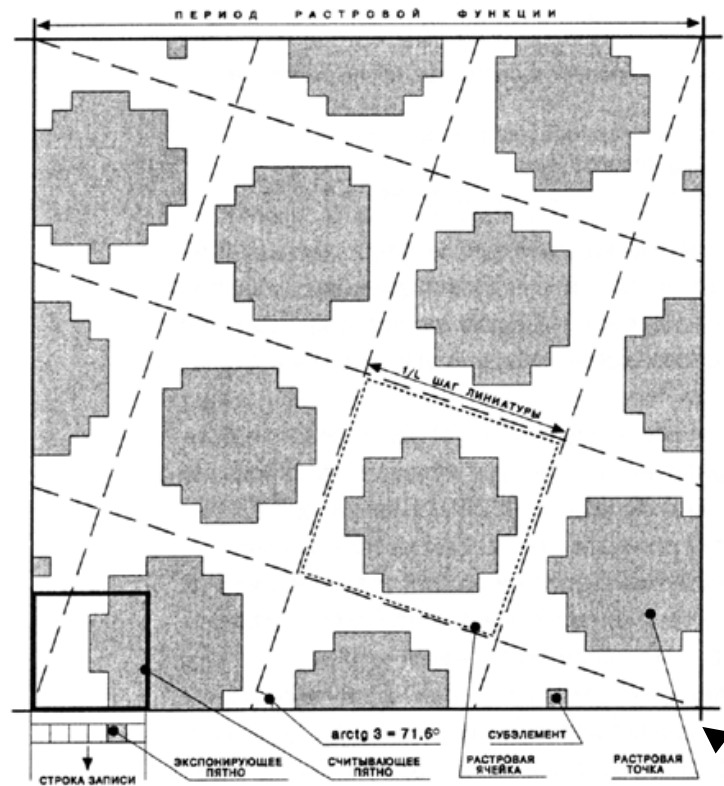


# The first non-periodic color electronic halftones avoiding the moire (1969)





# Dr. Uve Gast's "rational tangent" screen angling system (1971)



# From electronic reproduction and typesetting to computerized processing

## **Basic reasons:**

- combining the text and image data (page layout);
- sophisticated (local) color retouching, seamless combining the images, artistic effects.

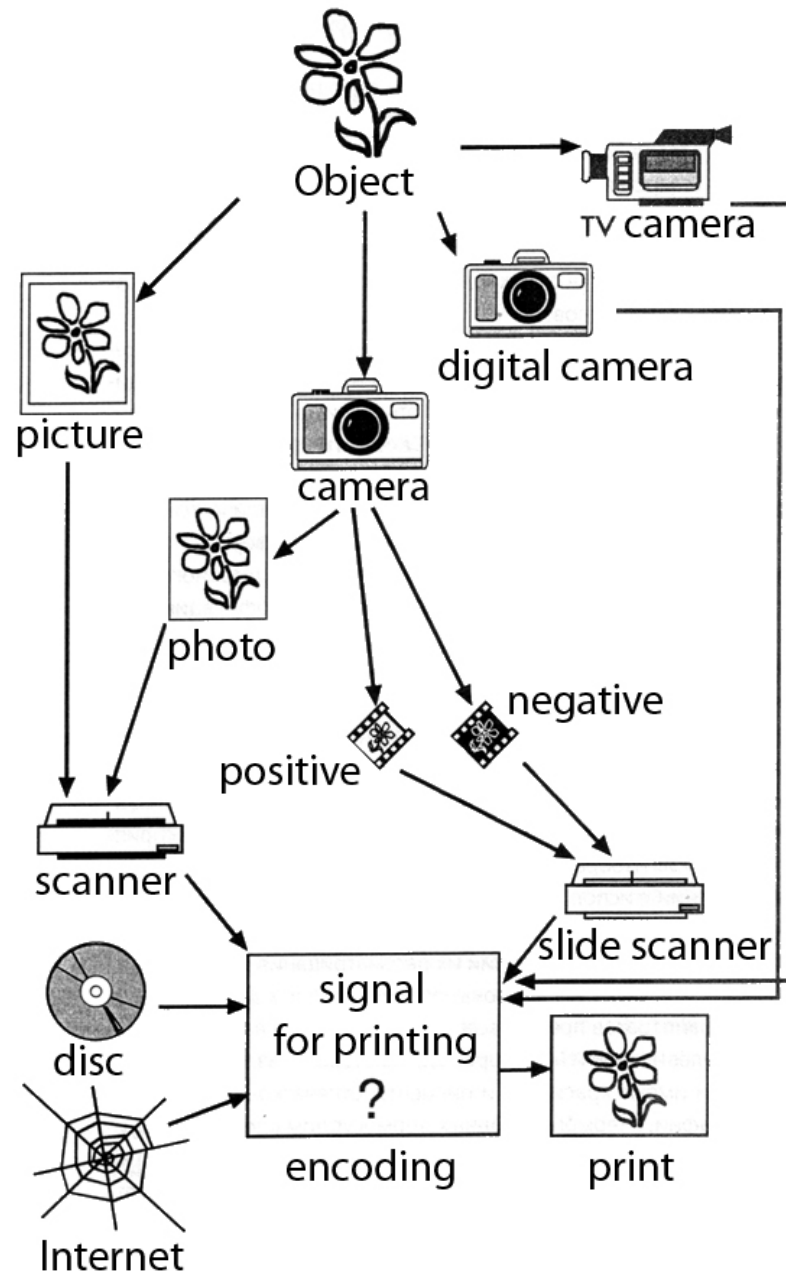
**Trade off:** computationally busy interpolative calculations for the image sizing or rotation.

From the closed Color Electronic Prepress Systems (CEPS) to the open, Postscript based graphic processing environment

**Basic reason**: flexible remote exchange with text, image, layout, color proofing and other data.

**Trade off**: discrepancy of color values interpretation at the different production stages and locations.

The same color is differently spoken by various inputs



# Conclusions

The knowledge of technology evolution is important for the appropriate understanding of its current state and further development potential.

Such knowledge can be effectively mastered when it's based on the retrospective analysis of principle reasons and compromises of moving to each next technology generation.

The digital technologies of today allow for the unprecedentedly precise and flexible control of graphic print data parameters. However, contrary to former times, that sometimes involves more intensive research and training for the adequate use of these facilities' potential.

**Thank you for attention**