

Introduction à la Photographie Algorithmique

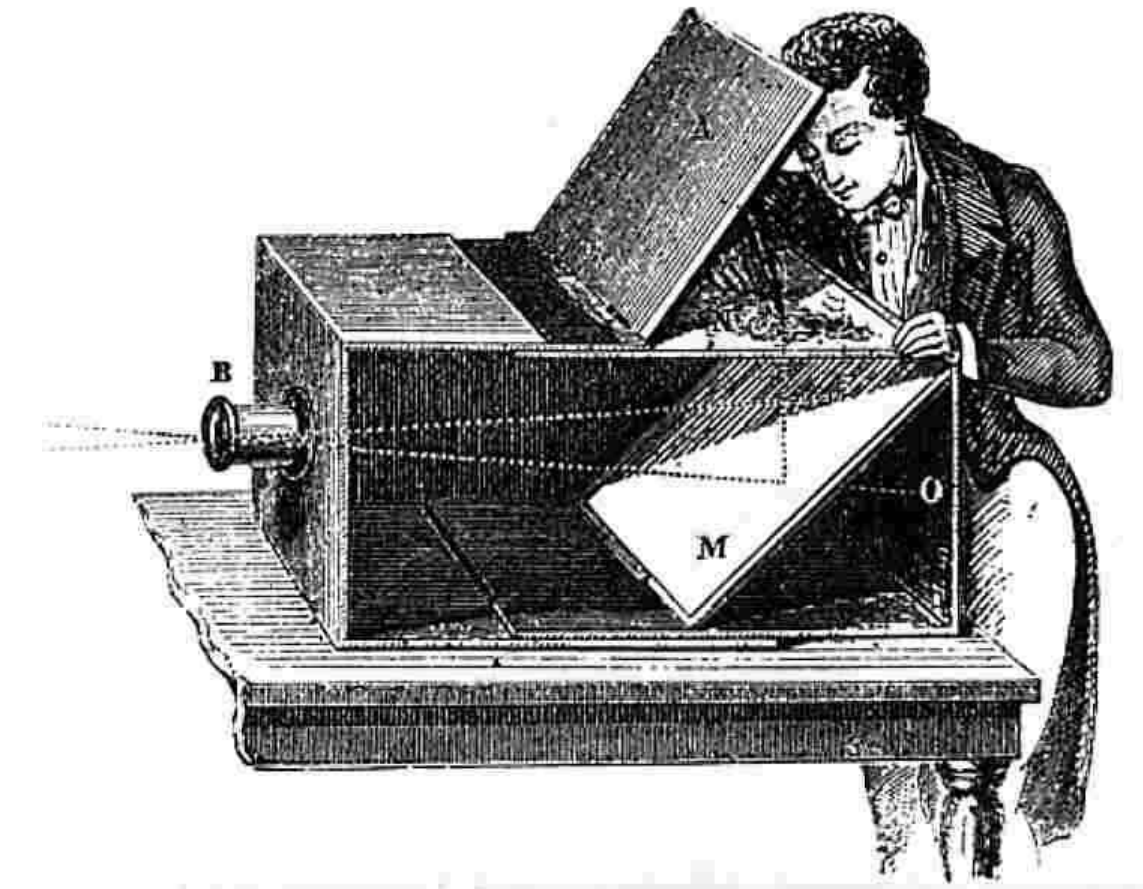


GIF-4105/7105 Photographie Algorithmique
Jean-François Lalonde

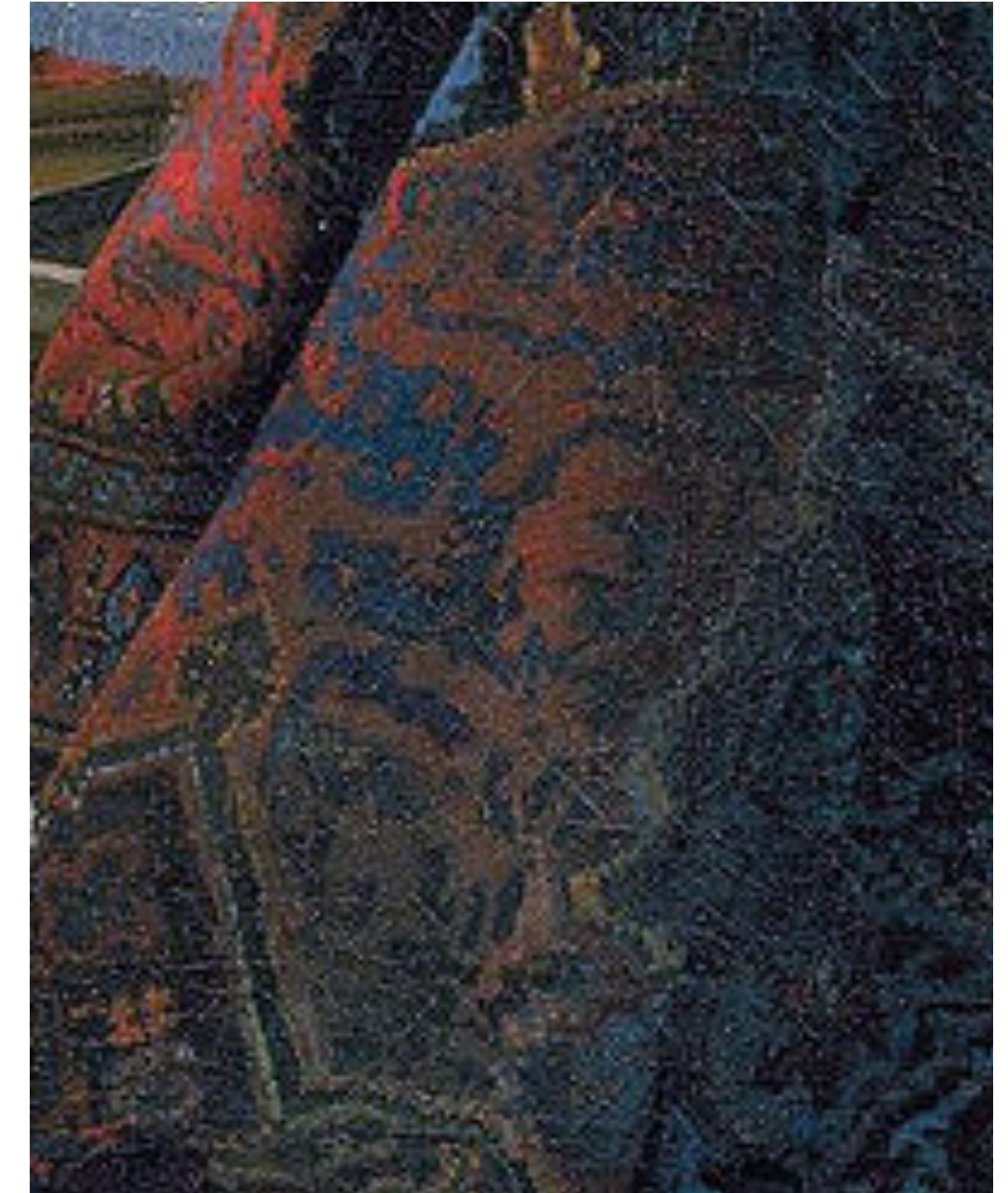
Camera obscura



Camera obscura (18e siècle)



Vermeer et le réalisme



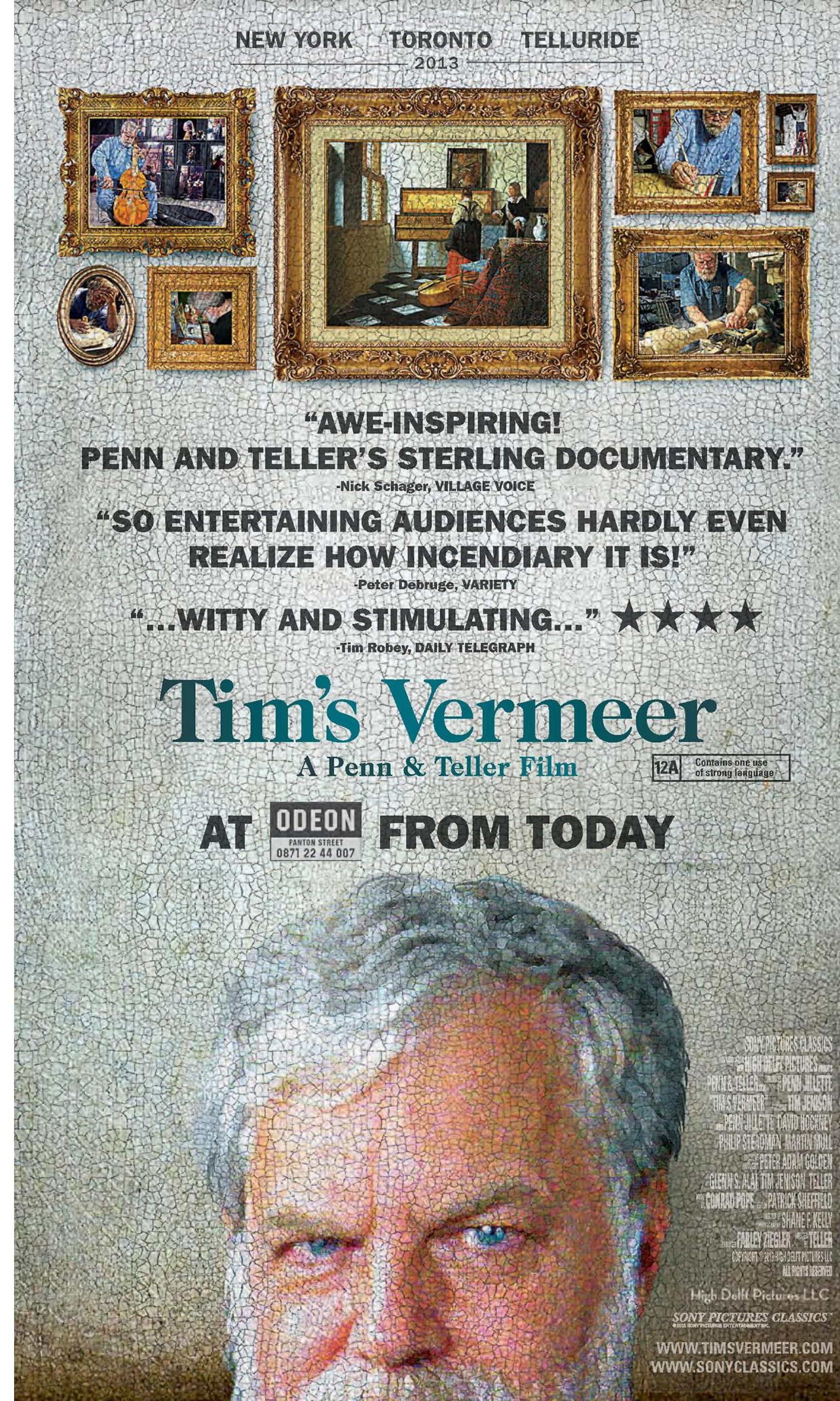
Petit détour: Tim's Vermeer

Aperçu :

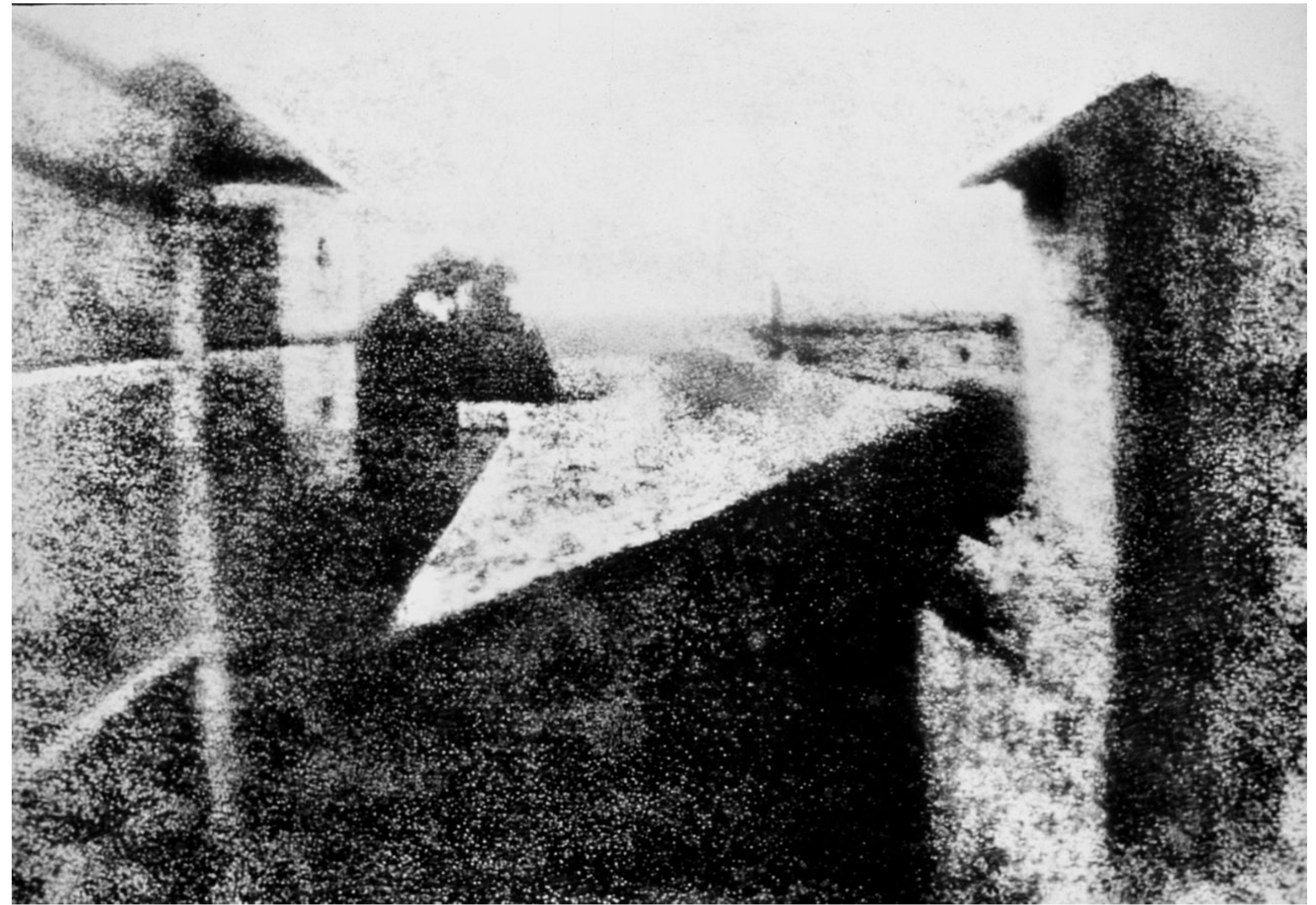
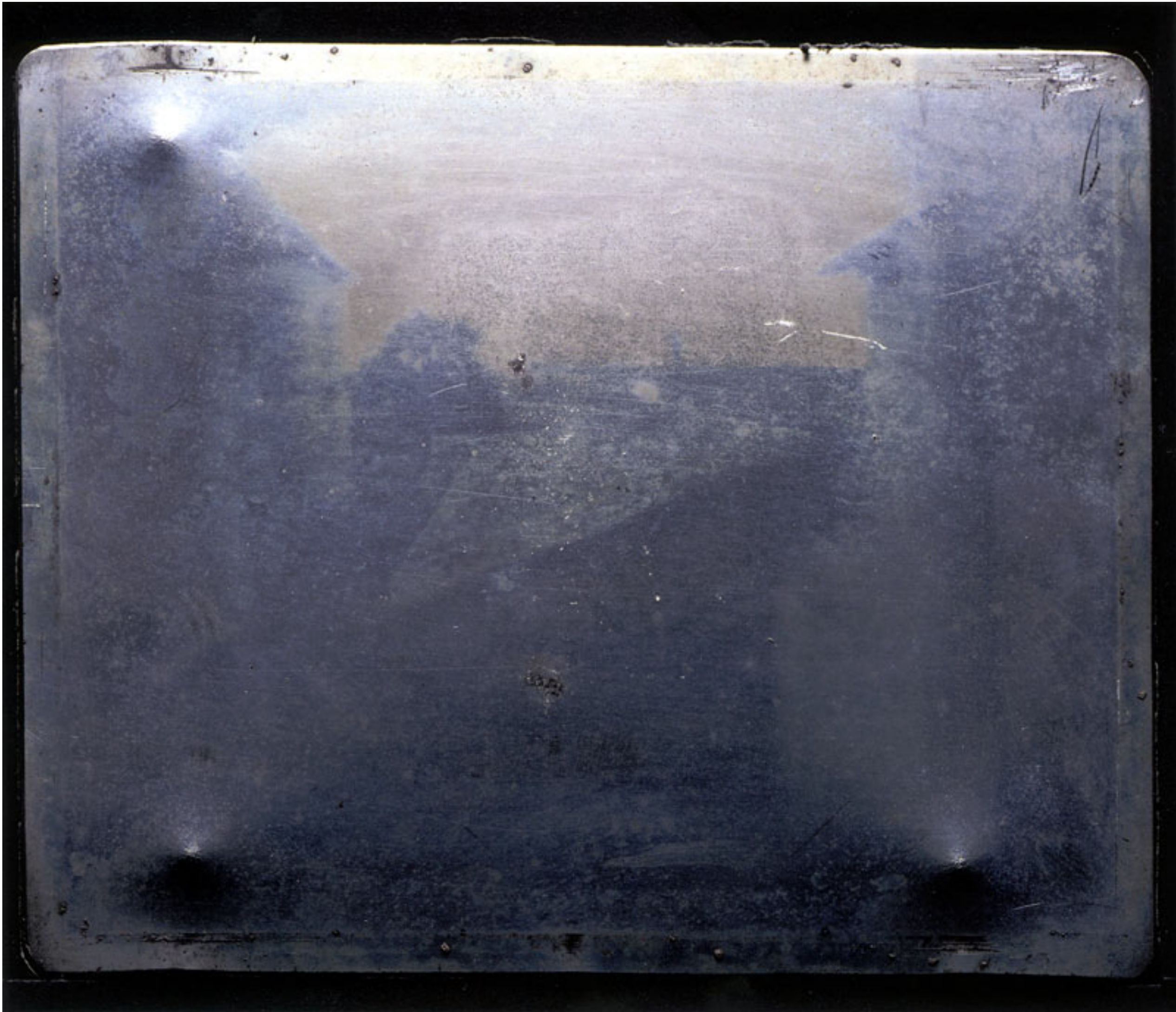
https://www.youtube.com/watch?v=CS_HUWs9c8c

Visionnez gratuitement (Bibliothèque de l'Université Laval) :

<https://media3-criterionpic-com.acces.bibl.ulaval.ca/htbin/wwform/016?T=KON1959>



Photographie la plus ancienne (c.1826)



Joseph Nicéphore Niépce. "Le point de vue de la fenêtre" c.1826.
Enhanced by Helmut Gersheim, c. 1952
public domain

Joseph Nicéphore Niépce. "Le point de vue de la fenêtre" c.1826.
Photo by J. Paul Getty Museum, from [petapixel](https://www.petapixel.com)

Première photographie (c.1826)



Joseph Nicéphore Niépce. Source: public domain

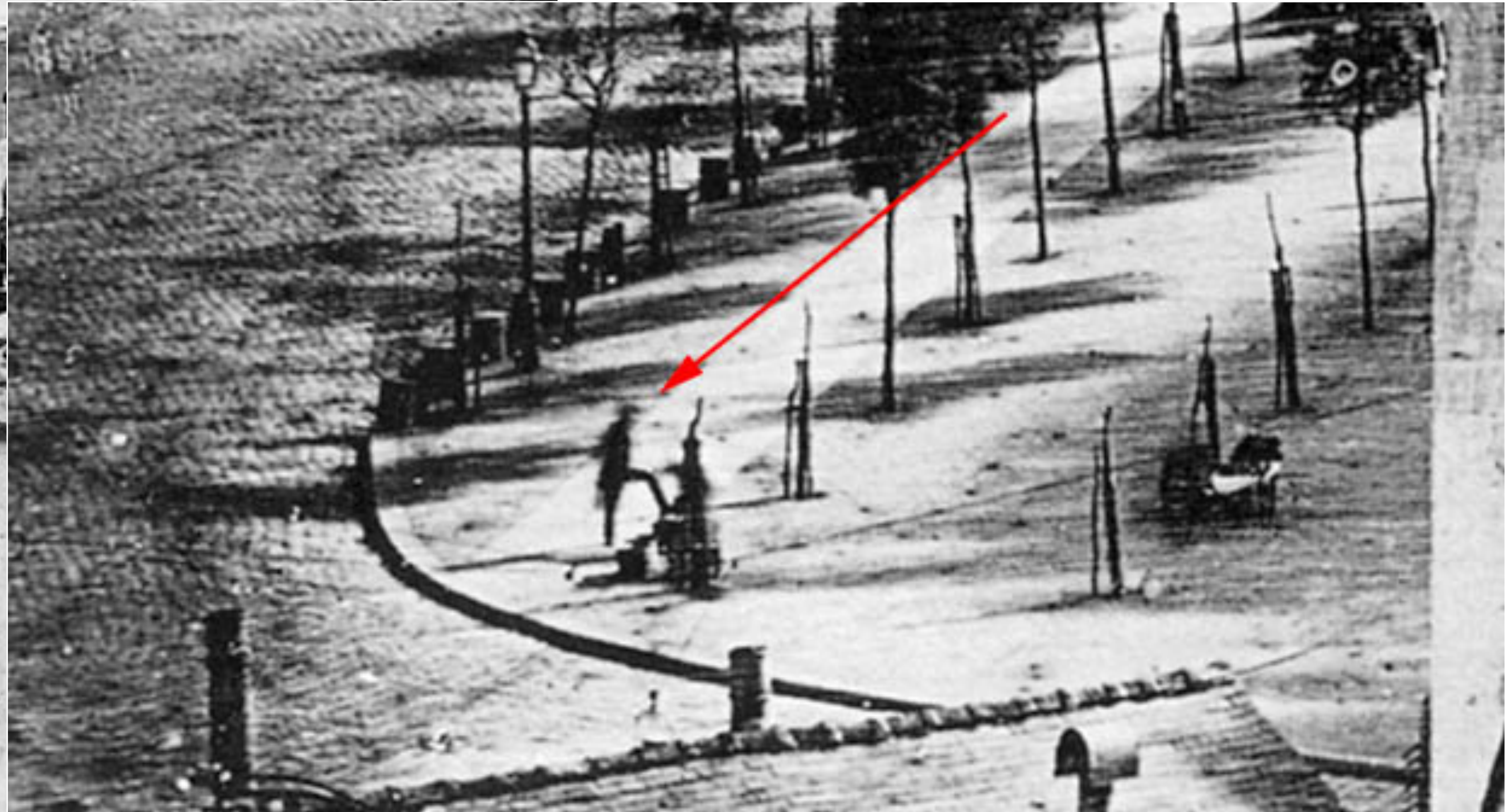
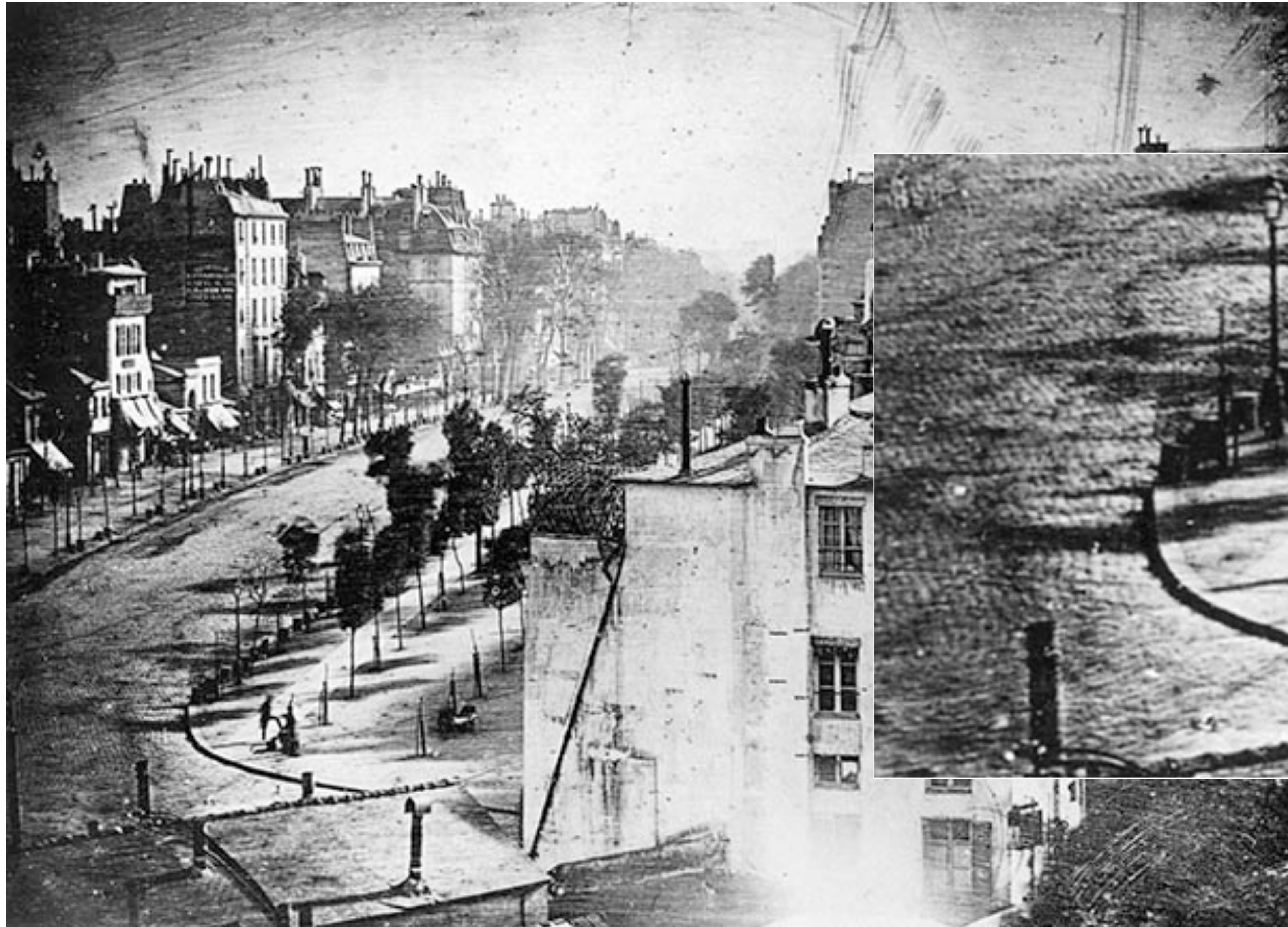


Photo Musée Nicéphore Niépce/Chalon-sur-Saône, from [petapixel](#)

Premier “daguerrotype”



Première photo d'un humain (1838)

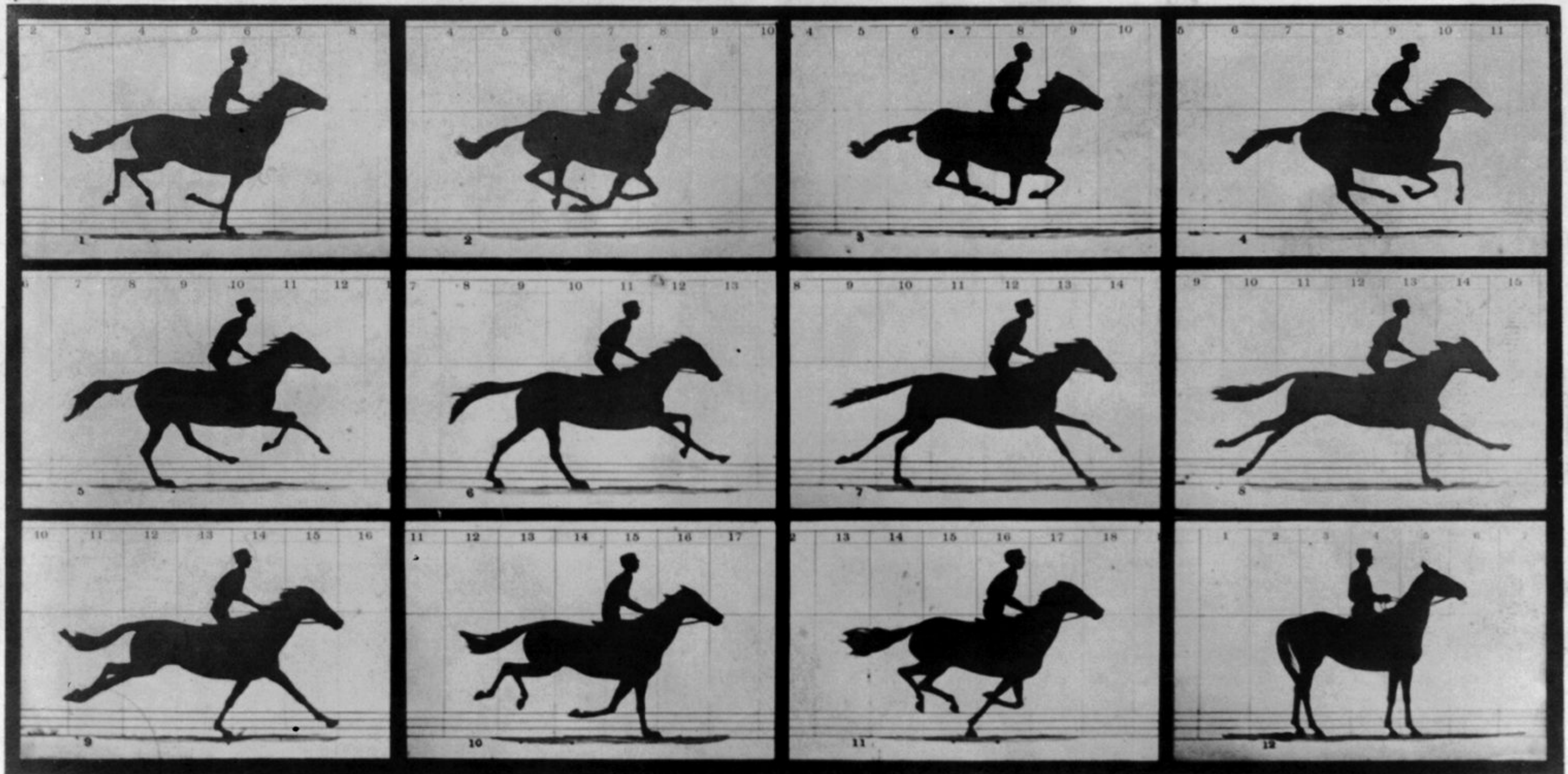


Premier selfie (1839)





||
“The 1821 derby at Epsom”, Jean Louis Théodore Géricault, 1821, [public domain](#)



Copyright, 1878, by MUYBRIDGE.

MORSE'S Gallery, 417 Montgomery St., San Francisco.

THE HORSE IN MOTION.

Illustrated by
MUYBRIDGE.

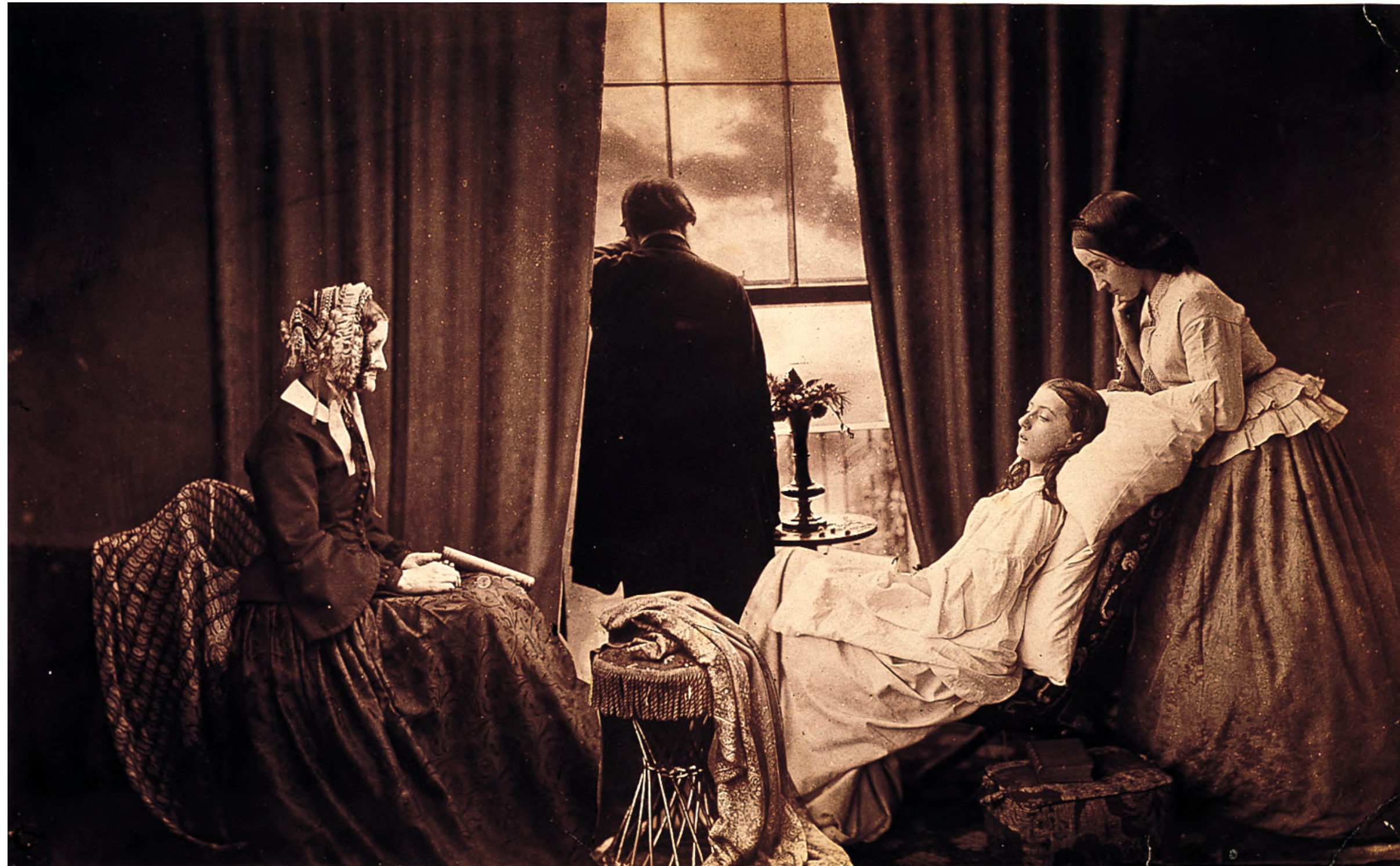
AUTOMATIC ELECTRO-PHOTOGRAPH.

"SALLIE GARDNER," owned by LELAND STANFORD; running at a 1.40 gait over the Palo Alto track, 19th June, 1878.

The negatives of these photographs were made at intervals of twenty-seven inches of distance, and about the twenty-fifth part of a second of time; they illustrate consecutive positions assumed in each twenty-seven inches of progress during a single stride of the mare. The vertical lines were twenty-seven inches apart; the horizontal lines represent elevations of four inches each. The exposure of each negative was less than the two-thousandth part of a second.

Qu'est-ce que la photo?

5 négatifs combinés



Henry Peach Robinson, "Fading away", 1858, public domain

Une seule photo, pas de retouche



Peter Henry Emerson, "At Plough, The End of the Furrow", 1887, public domain

Eastman Kodak (1888)

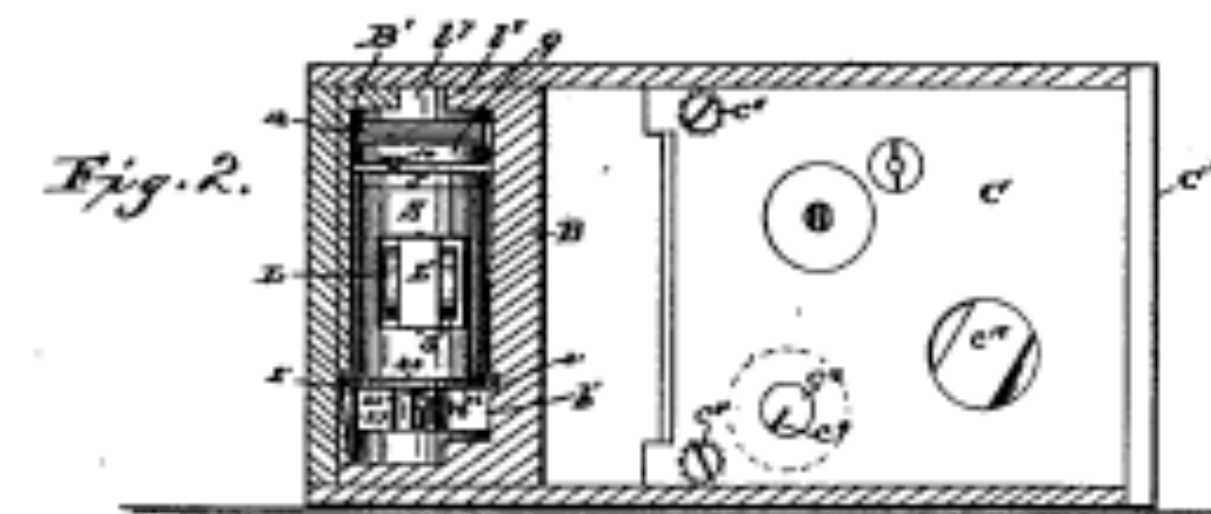
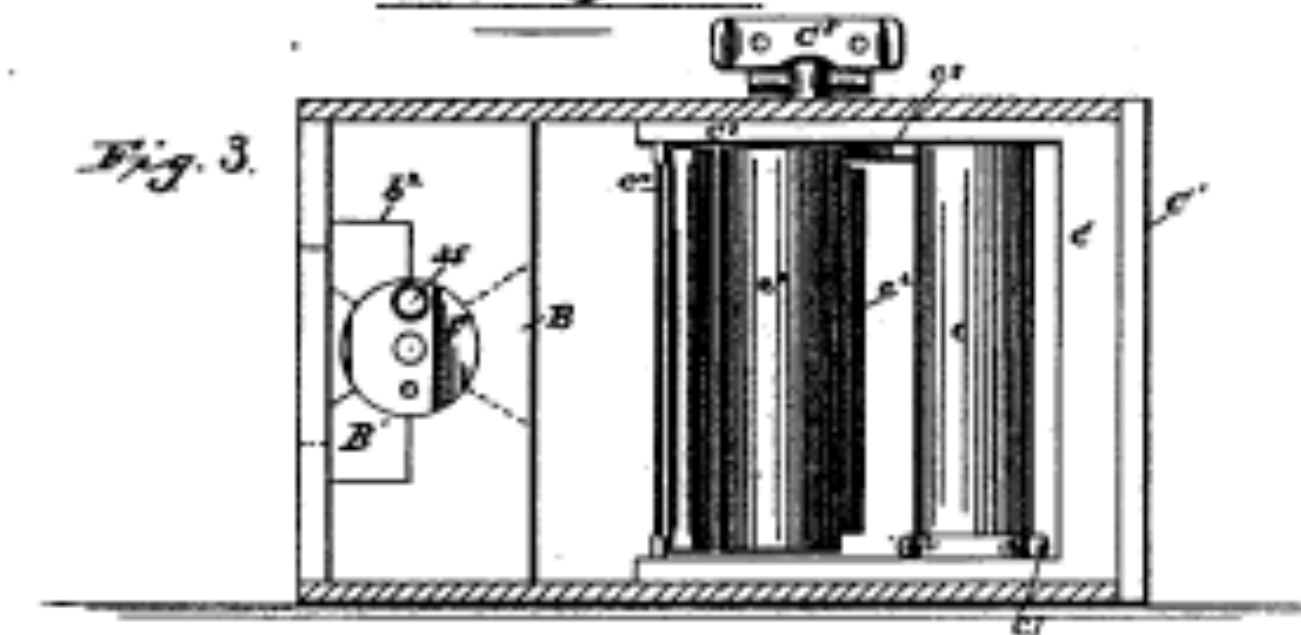
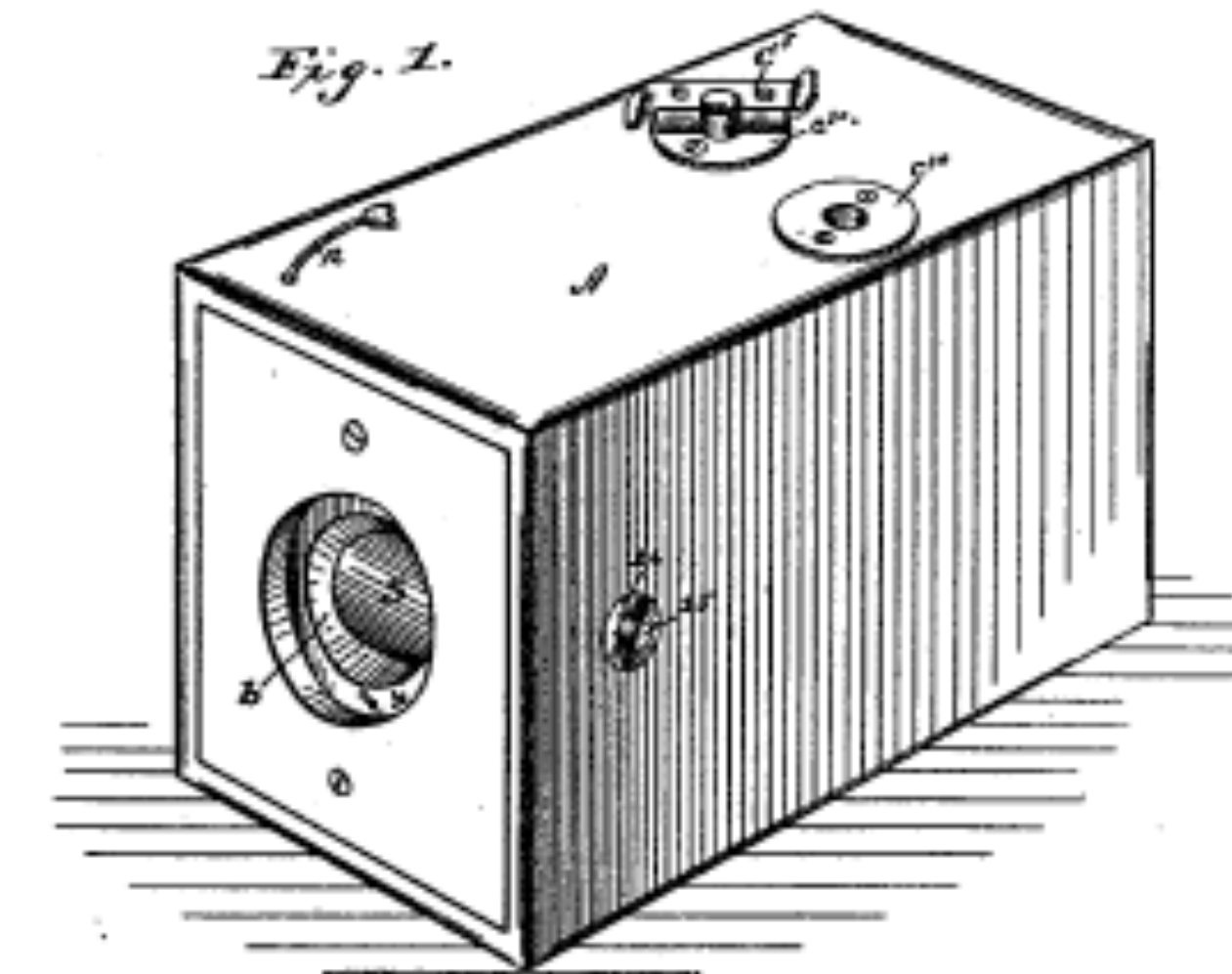
(No Model.)

G. EASTMAN.
CAMERA.

3 Sheets—Sheet 1.

No. 388,850.

Patented Sept. 4, 1888.



Witnesses.
Chas. R. Run.
A. Stewart.

Inventor.
George Eastman.
By Chas. R. Run. & A. Stewart
his Attorneys.

Systeme de zones (c.1939)



Première photo numérique (1957)

Resolution: 176x176 (0,03 megapixels)



Première caméra numérique (1975)



Première photo « mobile » (1997)



Caméras numériques modernes

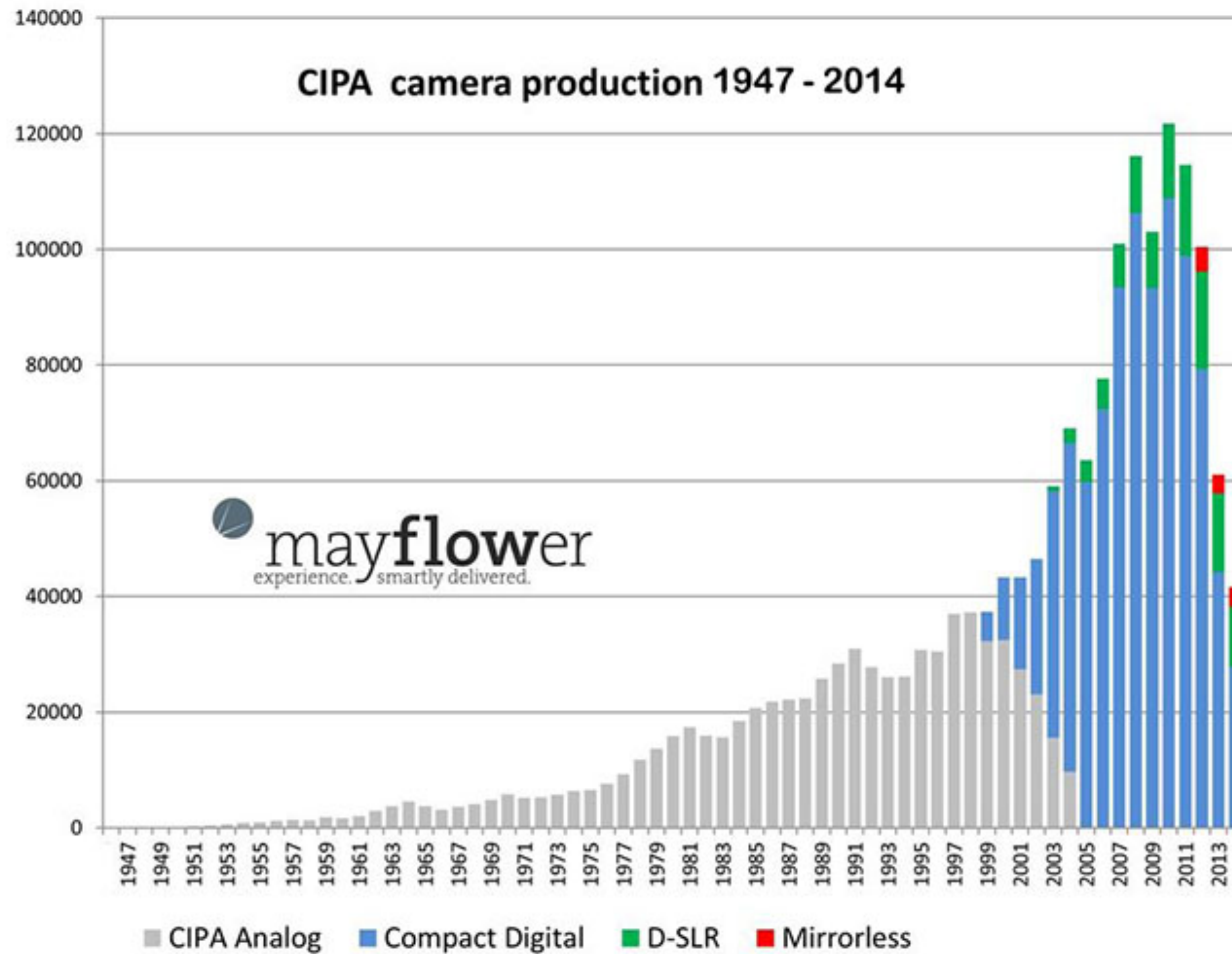


Credit: dslrcamerallife.com

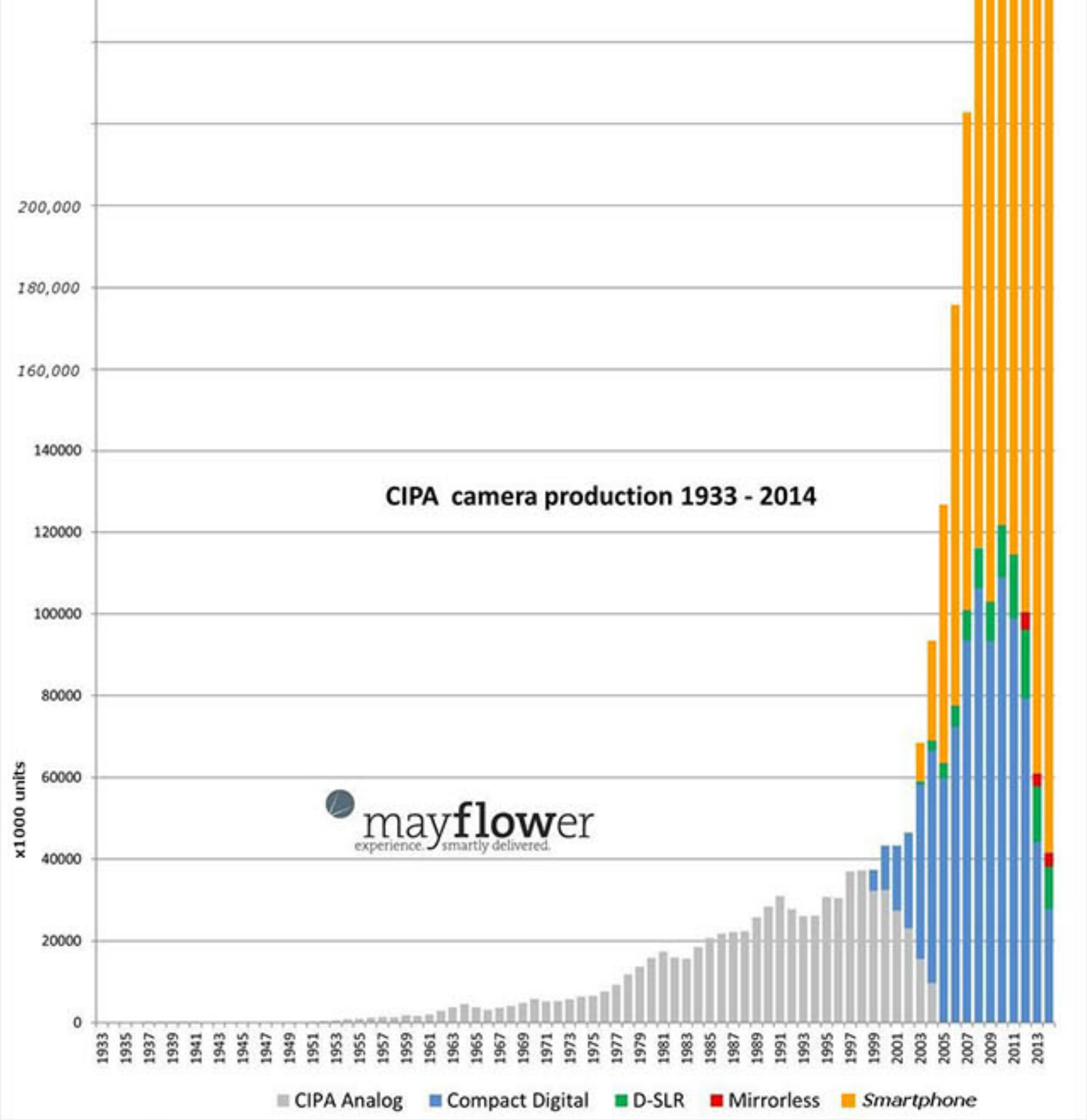


Credit: Apple

Évolution des caméras



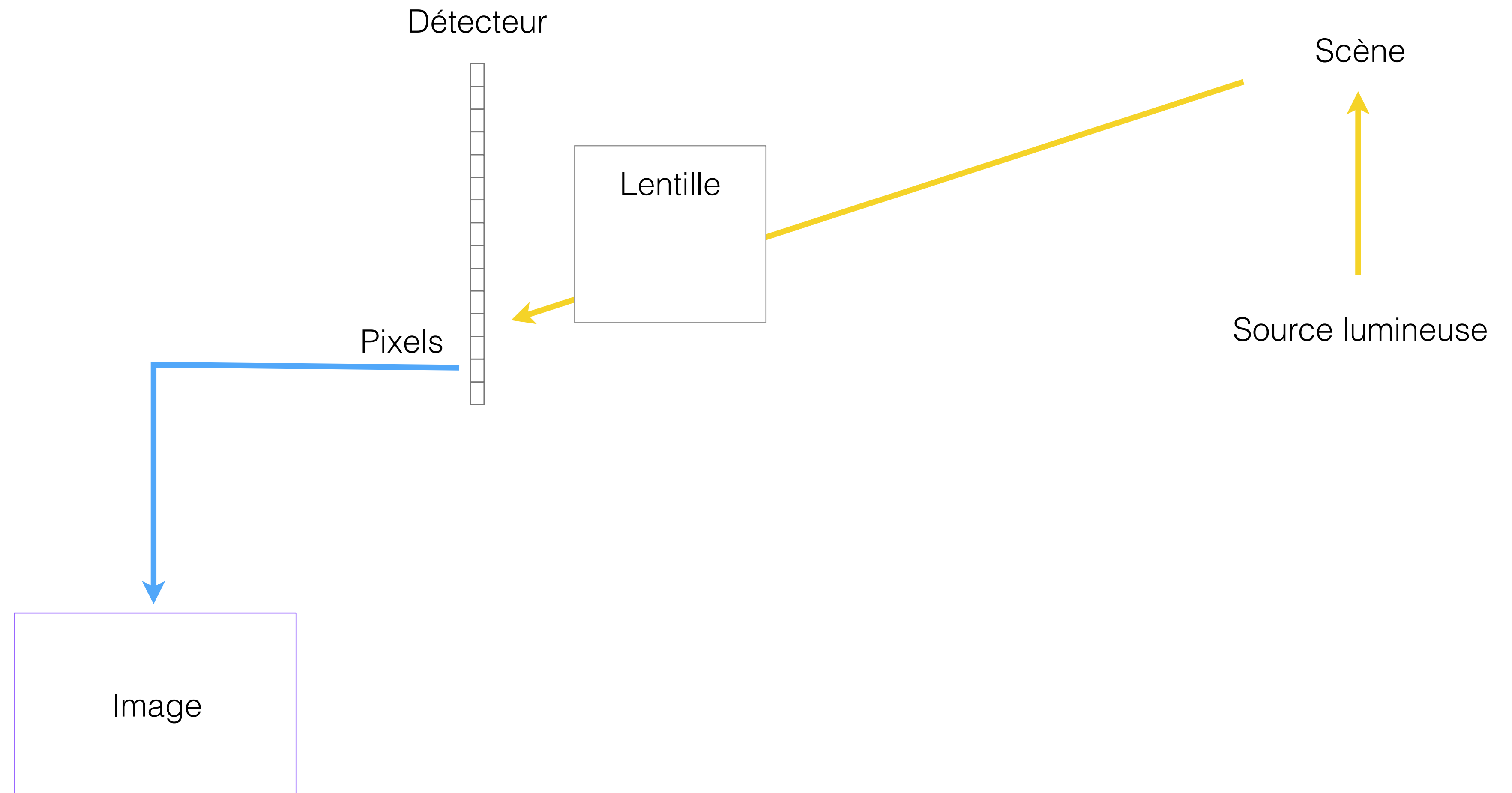
Évolution



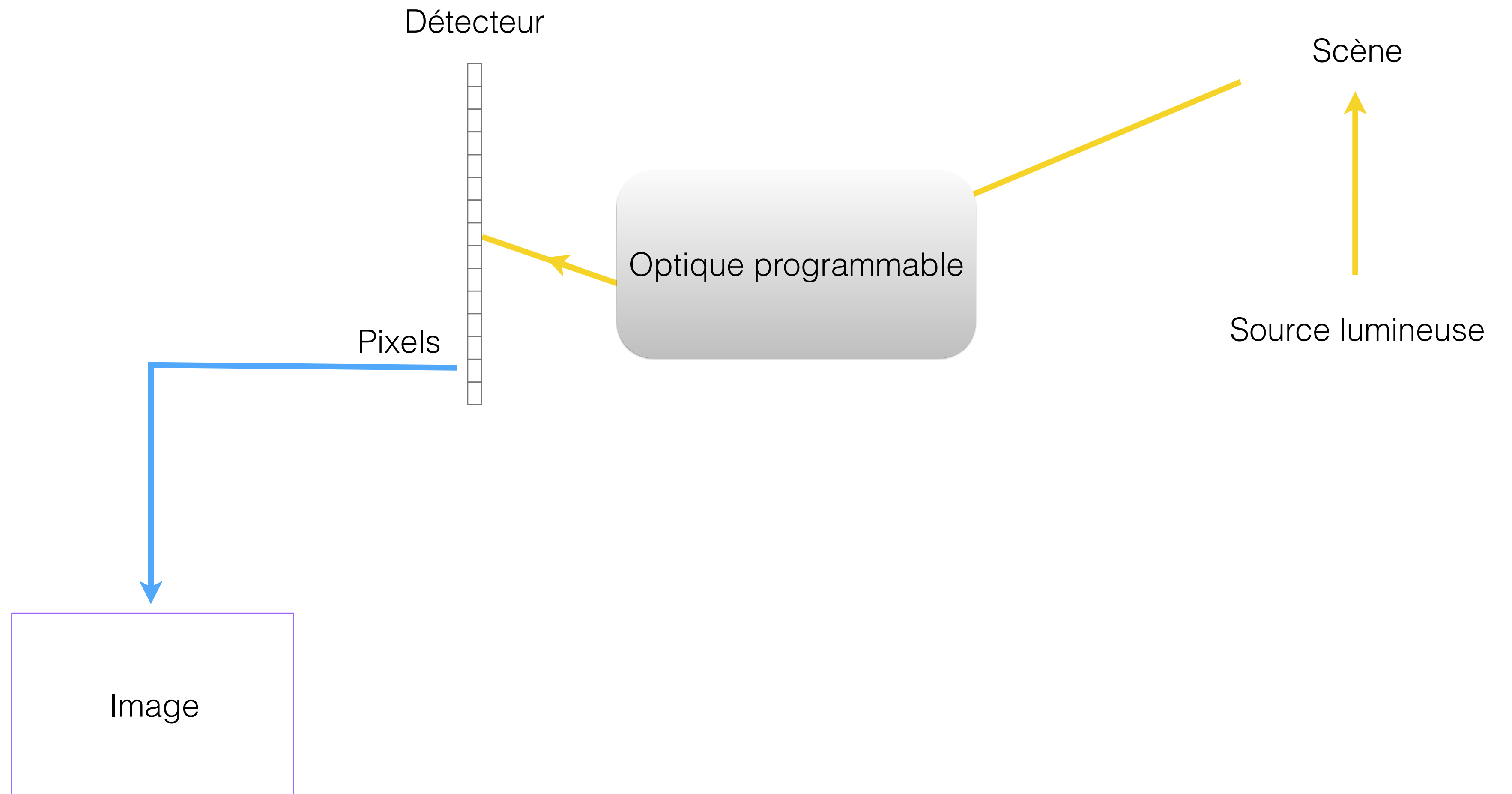
Photographie « traditionnelle »

Imite l'oeil humain

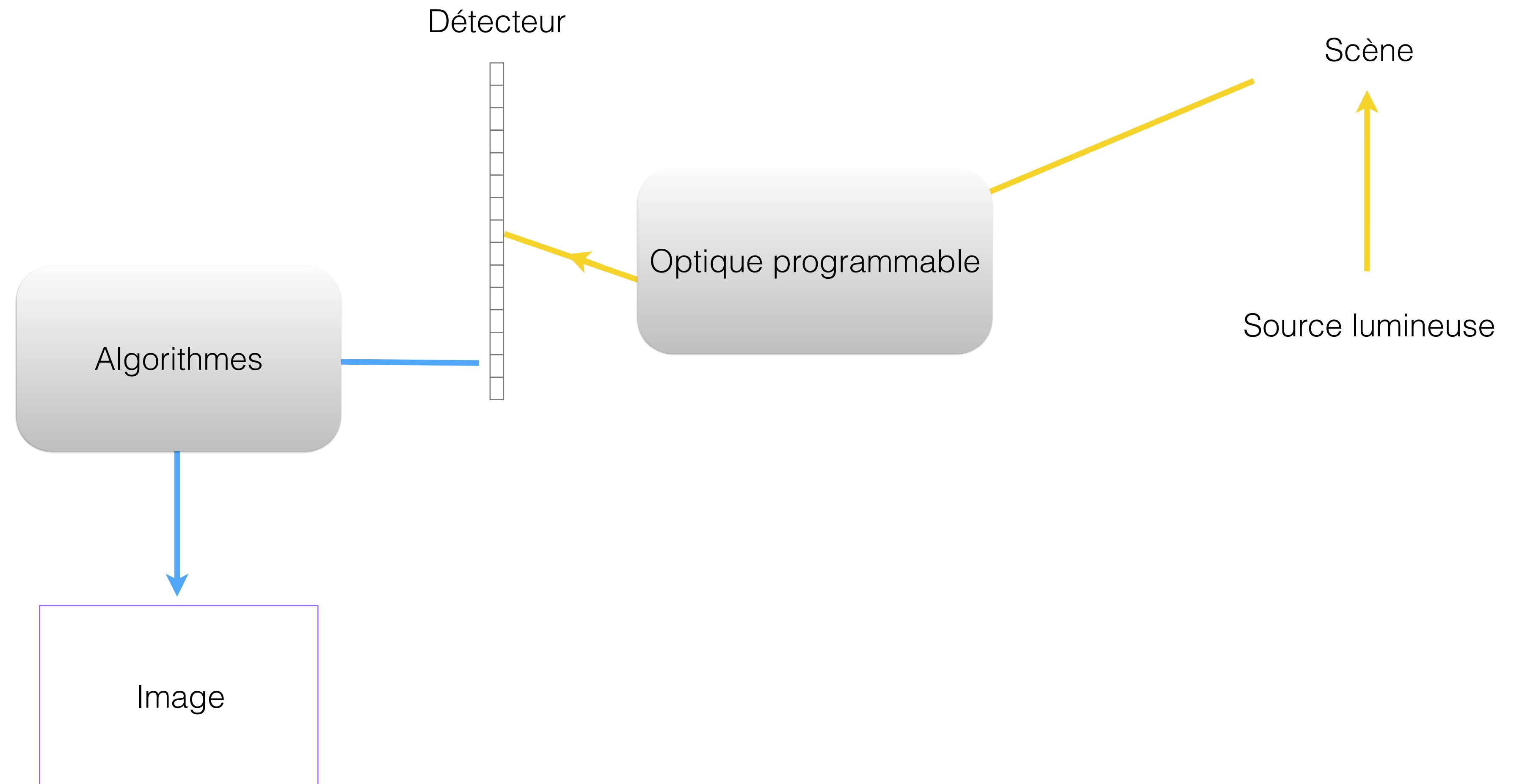
un seul point de vue
un seul instant
profondeur de champ fixe
illumination fixe
monde statique



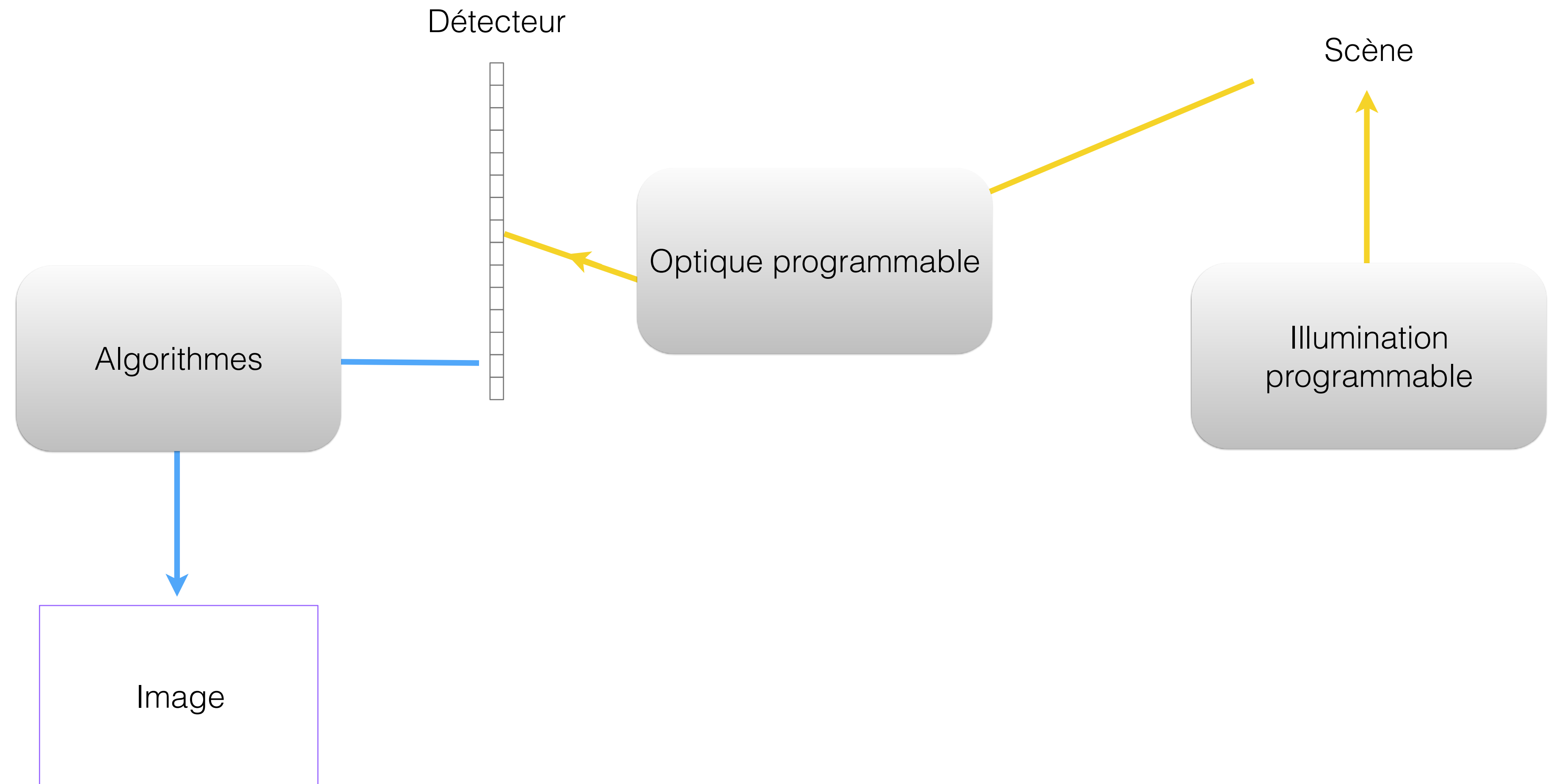
Photographie algorithmique



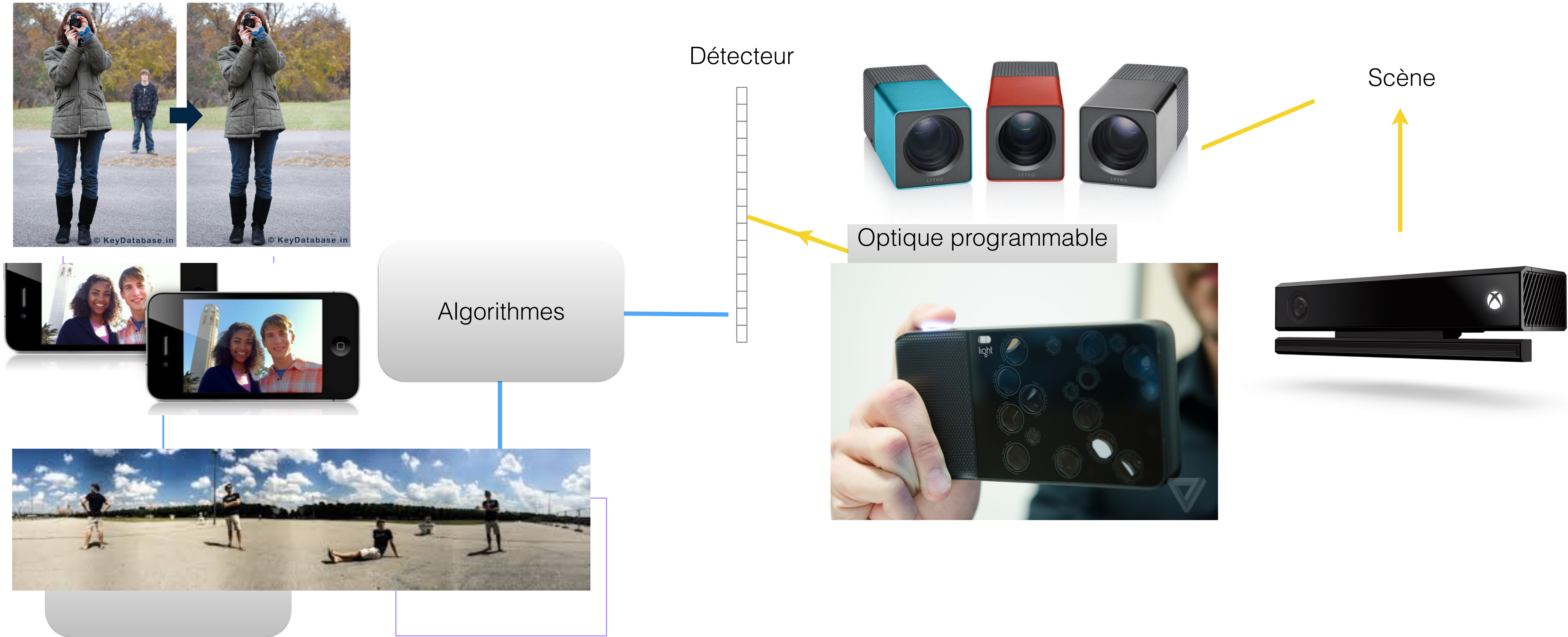
Photographie algorithmique



Photographie algorithmique



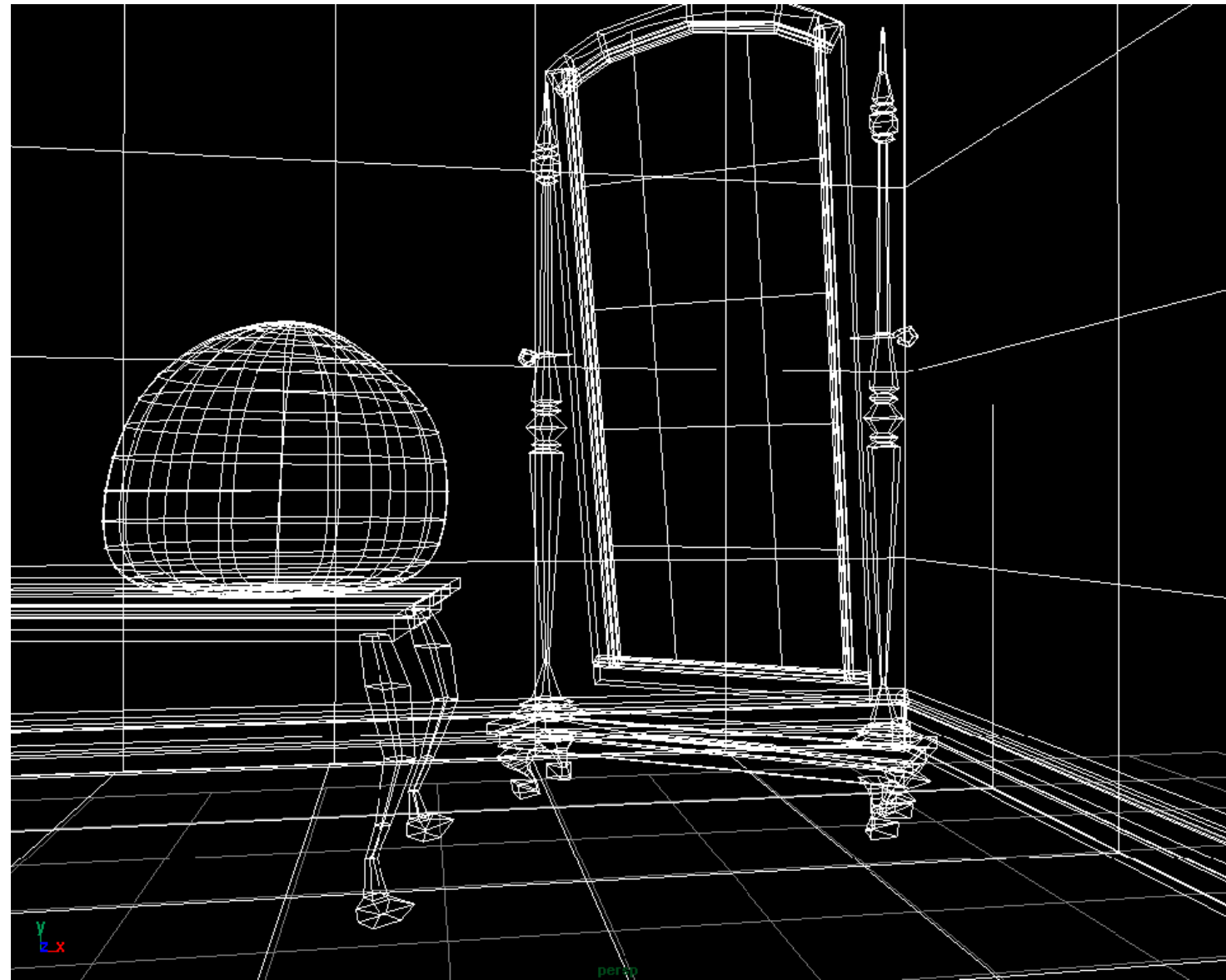
Photographie algorithmique



Et que dire de l'infographie?



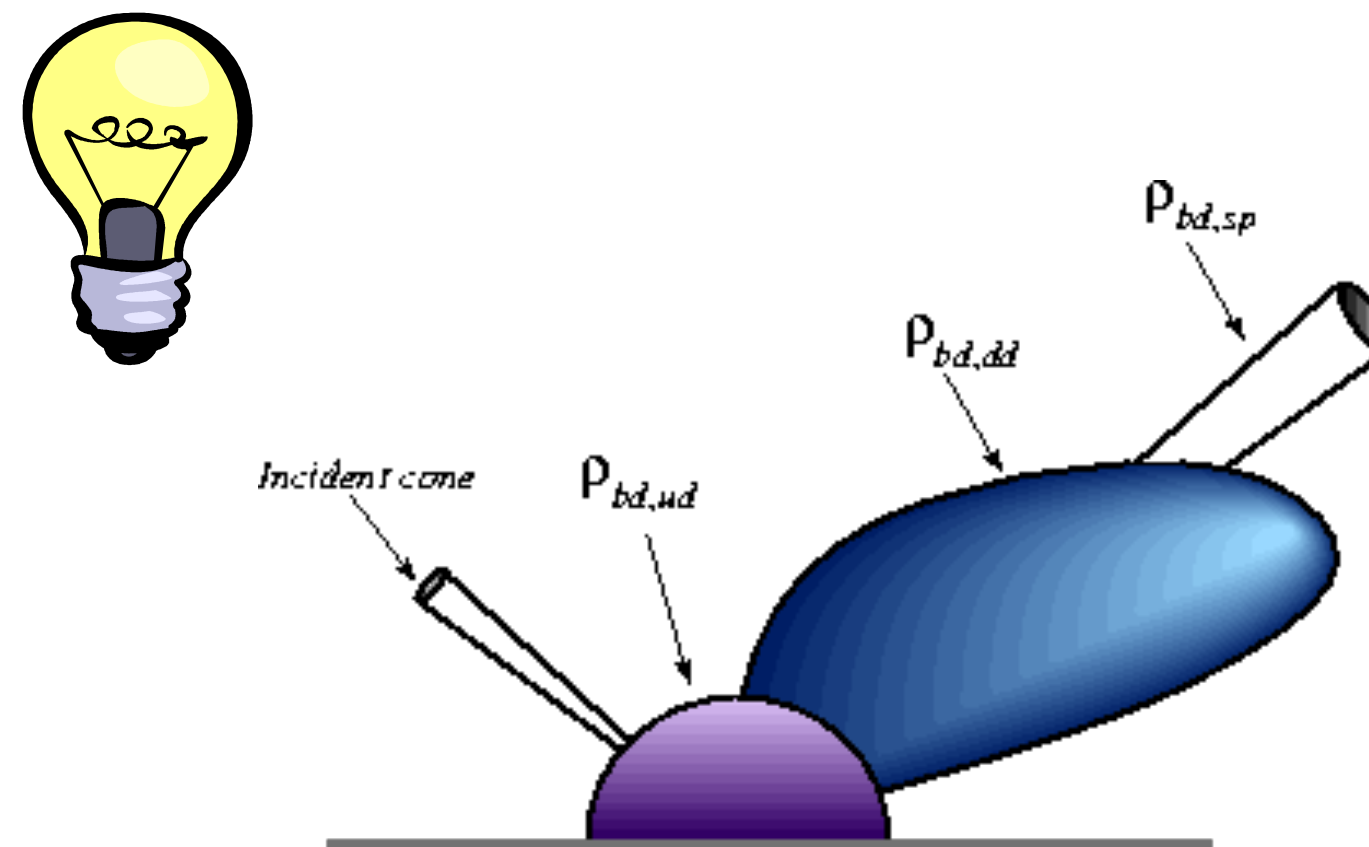
Infographie traditionnelle



Géométrie



Rendu



Simulation des lois de la physique

Infographie

Qu'est-ce qui ne va pas?



La richesse de notre monde



Qu'est-ce qui est difficile à modéliser?



Les gens



Blade Runner 2049



Photo Alyosha Efros

Cheveux et poils



Monsters University
(temps de rendu : 29h par image)



Photo Joaquin Rosales Gomez
(temps de rendu : 1/30s par image)

Photo ou rendu?



Photo ou rendu?



Pas pour tout le monde...



Le spectre du réalisme

Infographie



facile de créer de nouveaux mondes

facile de manipuler le point de vue, la disposition des objets, etc.

très difficile à rendre réaliste!

Photographie
Algorithmique

réalisme
capture
manipulation

Photographie



facile à capturer, limités au “vrai monde”

très difficile de manipuler le point de vue, la disposition des objets, etc.

réaliste!