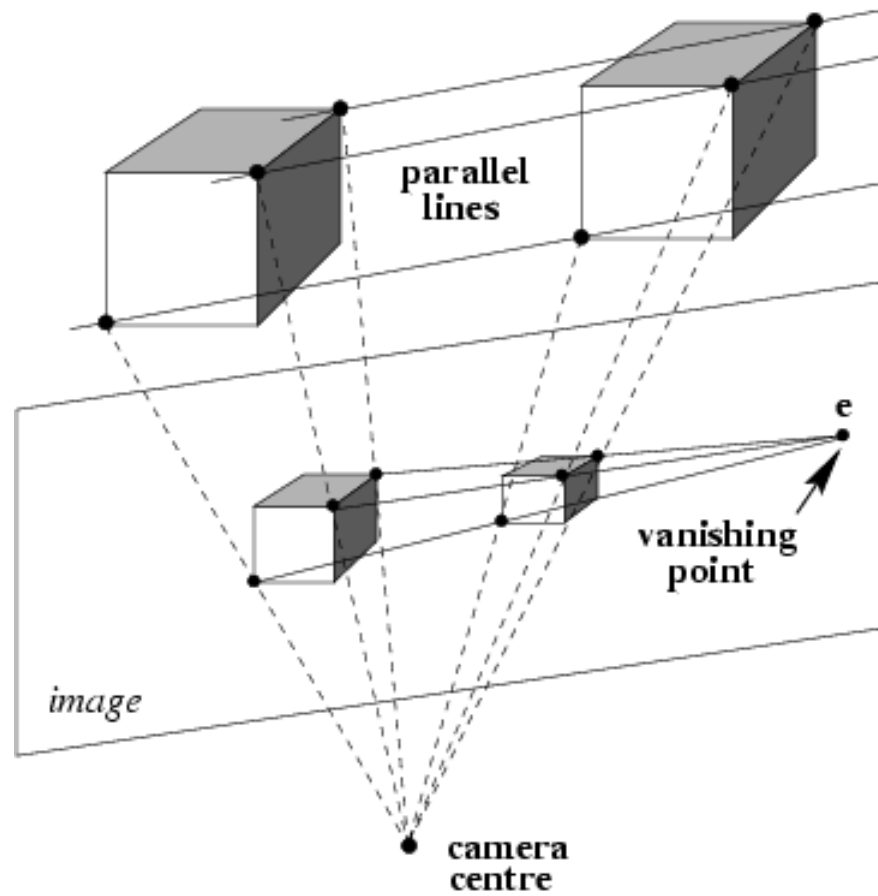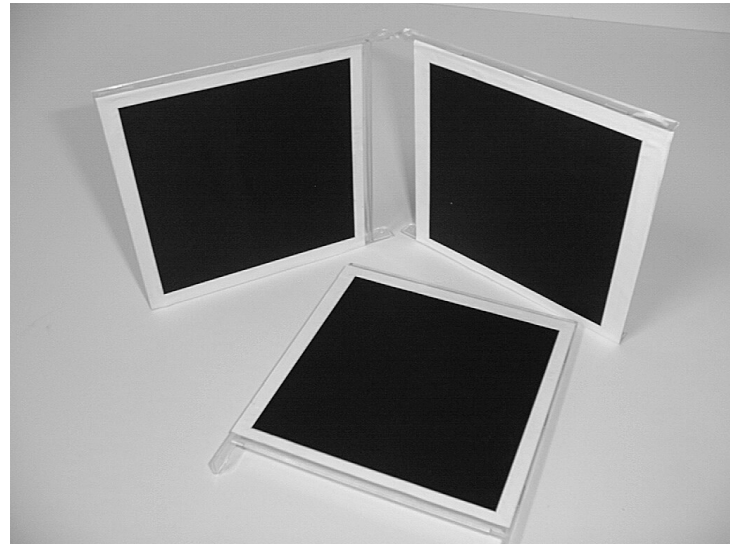# POINTS DE FUITE / LIGNES DE FUITE

Retrouvez la ligne d'horizon de cette prise de vue.

Exercice I.a) et b)

MESURES AFFINES ET INFORMATIONS 3D
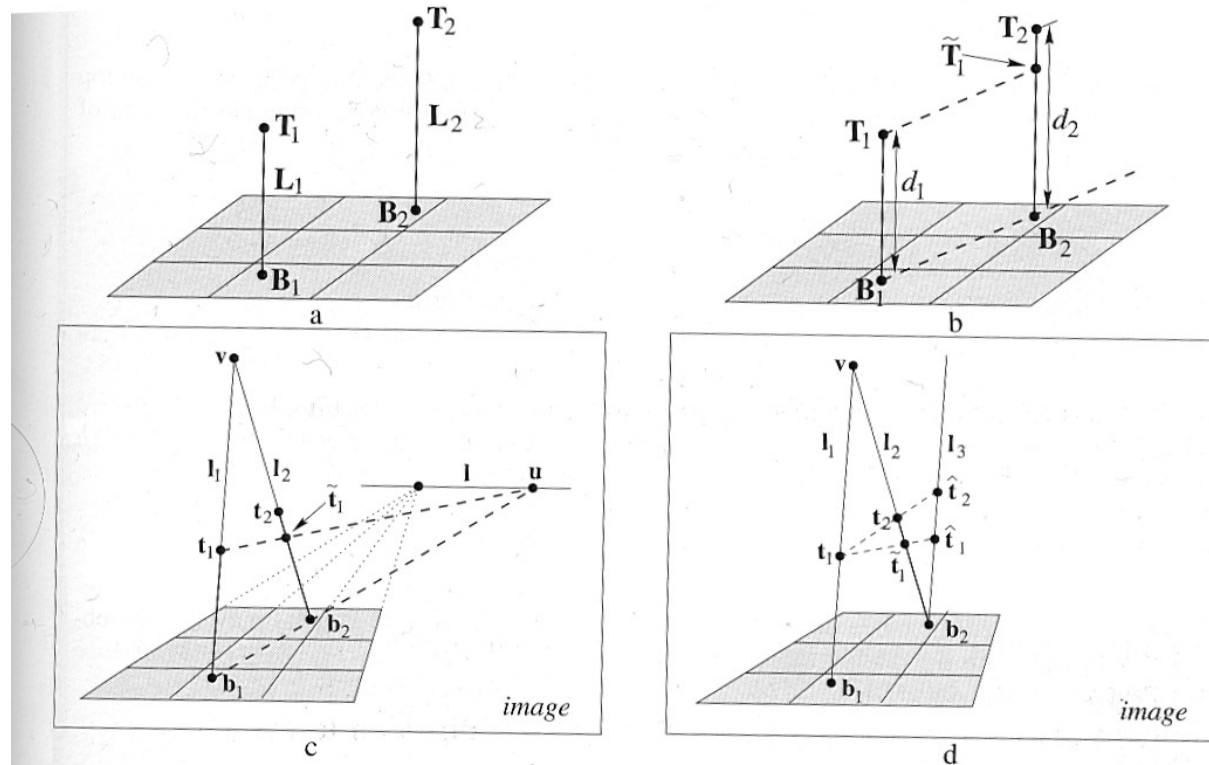

Fig. 8.20. **Computing length ratios of parallel scene lines.** (a) **3D geometry:** *The vertical line segments* $\mathbf{L}_1 = \langle \mathbf{B}_1, \mathbf{T}_1 \rangle$ *and* $\mathbf{L}_2 = \langle \mathbf{B}_2, \mathbf{T}_2 \rangle$ *have length* d_1 *and* d_2 *respectively. The base points* $\mathbf{B}_1, \mathbf{B}_2$ *are on the ground plane. We wish to compute the scene length ratio* $d_1 : d_2$ *from the imaged configuration. (b) In the scene the length of the line segment* $\mathbf{L}_1$ *may be transferred to* $\mathbf{L}_2$ *by constructing a line parallel to the ground plane to generate the point* $\widetilde{\mathbf{T}}_1$. (c) **Image geometry:** $\mathbf{l}$ *is the ground plane vanishing line, and* $\mathbf{v}$ *the vertical vanishing point. A corresponding parallel line construction in the image requires first determining the vanishing point* $\mathbf{u}$ *from the images* $\mathbf{b}_i$ *of* $\mathbf{B}_i$, *and then determining* $\tilde{\mathbf{t}}_1$ *(the image of* $\widetilde{\mathbf{T}}_1$) *by the intersection of* $\mathbf{l}_2$ *and the line* $\langle \mathbf{t}_1, \mathbf{u} \rangle$. (d) *The line* $\mathbf{l}_3$ *is parallel to* $\mathbf{l}_1$ *in the image. The points* $\hat{\mathbf{t}}_1$ *and* $\hat{\mathbf{t}}_2$ *are constructed by intersecting* $\mathbf{l}_3$ *with the lines* $\langle \mathbf{t}_1, \tilde{\mathbf{t}}_1 \rangle$ *and* $\langle \mathbf{t}_1, \mathbf{t}_2 \rangle$ *respectively. The distance ratio* $d(\mathbf{b}_2, \hat{\mathbf{t}}_1) : d(\mathbf{b}_2, \hat{\mathbf{t}}_2)$ *is the computed estimate of* $d_1 : d_2$.
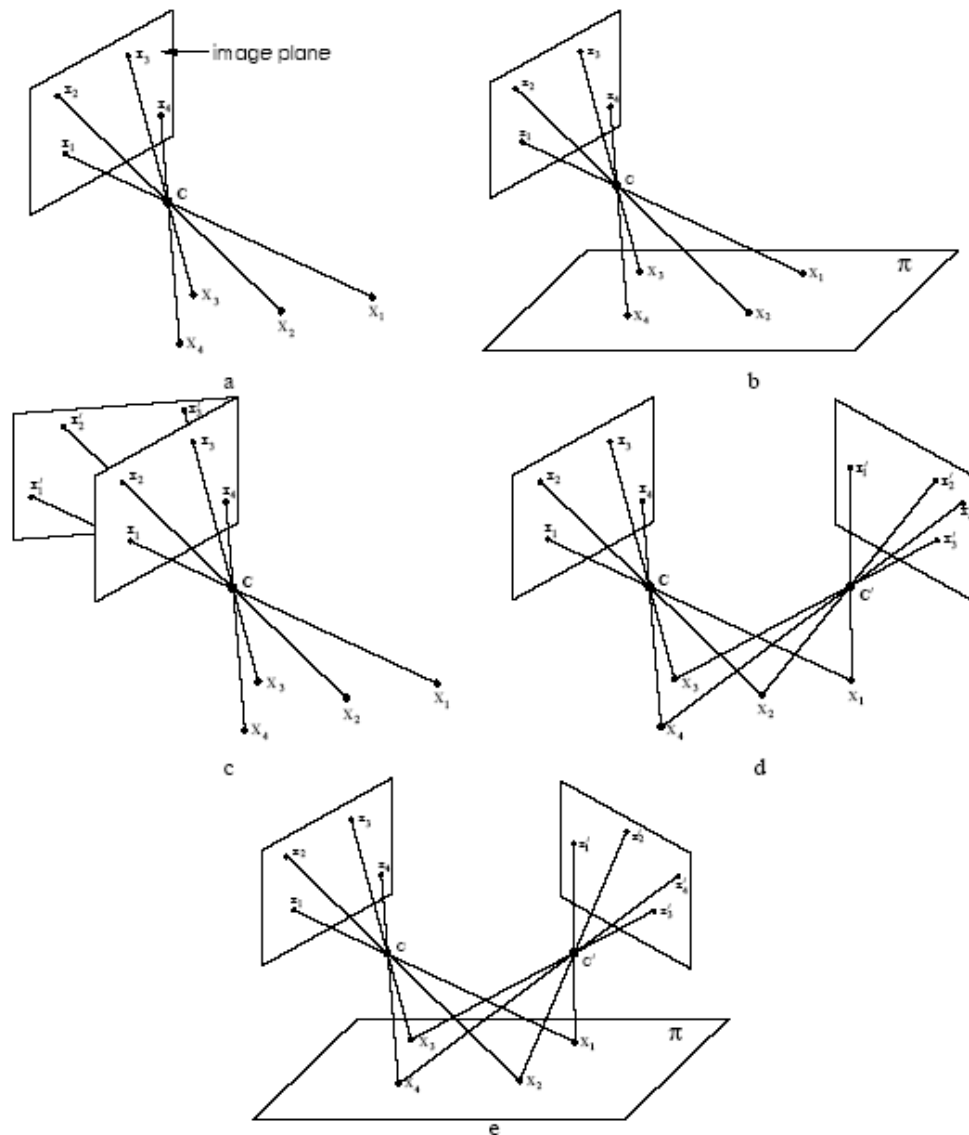
Exo I.c

HOMOGRAPHIES
H_{3x3}

Fig. 1.1. **The camera centre is the essence.** *(a) Image formation: the image points x_i are the intersection of a plane with rays from the space points X_i through the camera centre C. (b) If the space points are coplanar then there is a projective transformation between the world and image planes, $x_i = H_{3 \times 3} X_i$. (c) All images with the same camera centre are related by a projective transformation, $x'_i = H'_{3 \times 3} x_i$. Compare (b) and (c) – in both cases planes are mapped to one another by rays through a centre. In (b) the mapping is between a scene and image plane, in (c) between two image planes. (d) If the camera centre moves, then the images are in general not related by a projective transformation, unless (e) all the space points are coplanar.*

GENERER DES VUES SYNTHETIQUES
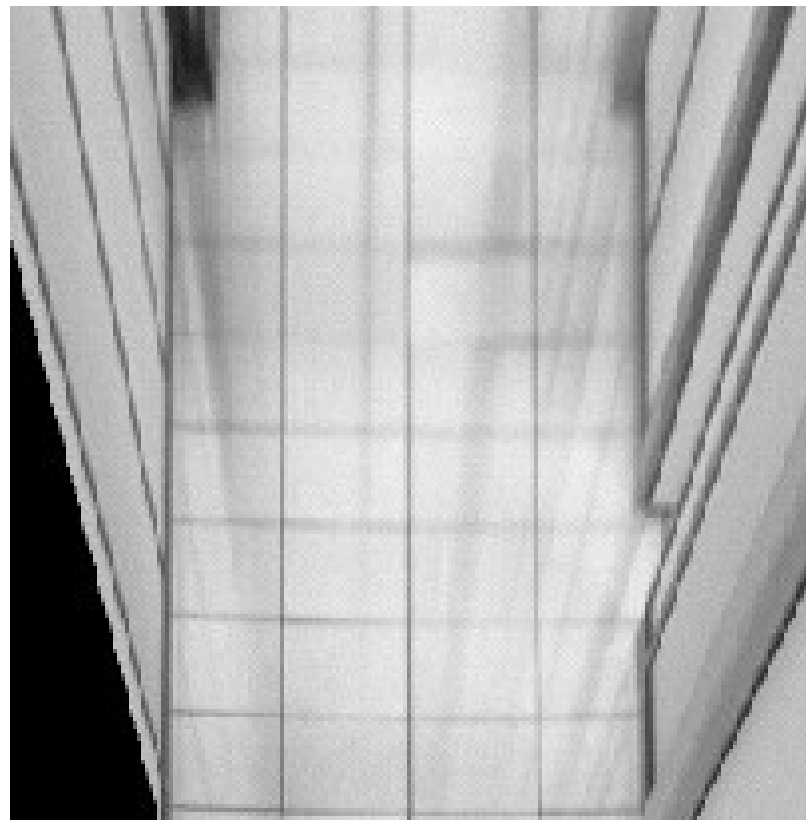
MOSAIQUER
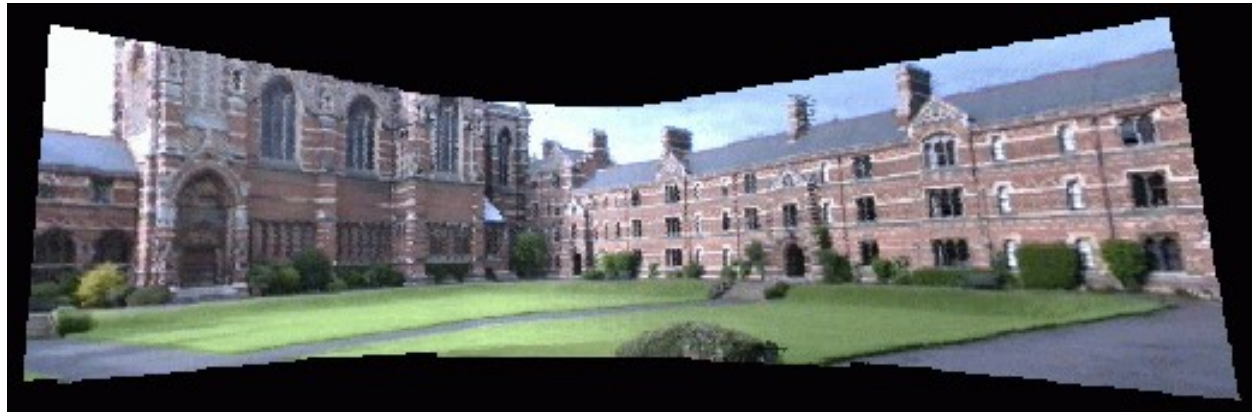
Original vue oblique

Original vue dessus

Vue de dessus
redressée

Proposez un algorithme pour estimer
l'Homographie à appliquer