Shadows Falling from One Geometric Image to Another in Orthogonal Projections are Constructed Using The Method of Cut Planes And The Method of The Reverse Ray

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Abstract
Shadows falling from one geometric image to another, as well as in orthogonal projections, are constructed using the method of cut planes and the method of the reverse ray. The shadow of a point on a plane. To draw a shadow from a point to a plane, you need to solve problems for the intersection of a line with a plane. The straight line in this problem is a light beam passing through a point.

Keywords:

Introduction

Figure 1

A shadow is drawn from the point K to the vertical plane. The sun is on the left side.
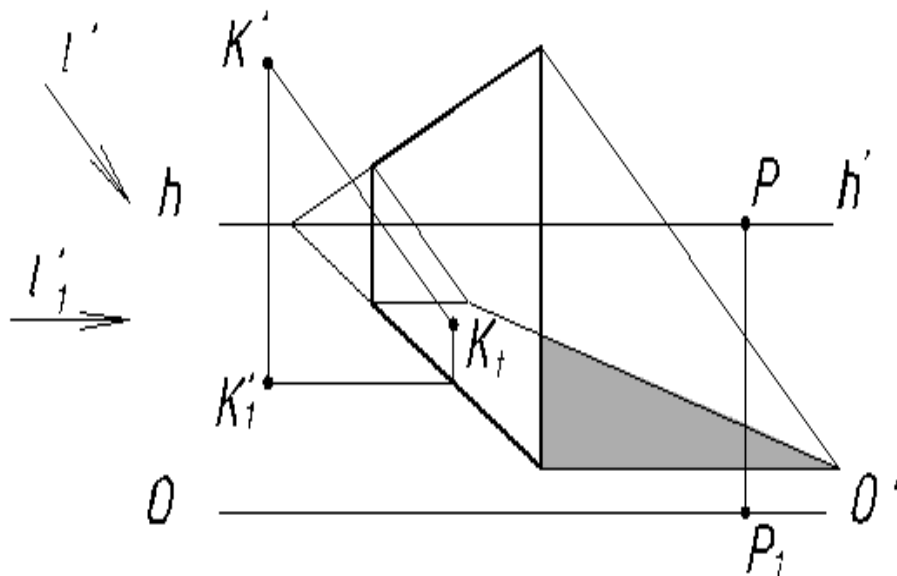

Figure 1

Figure 2 The shadow from the point K to the plane Σ (ABC) is plotted. The sun is on the right side.
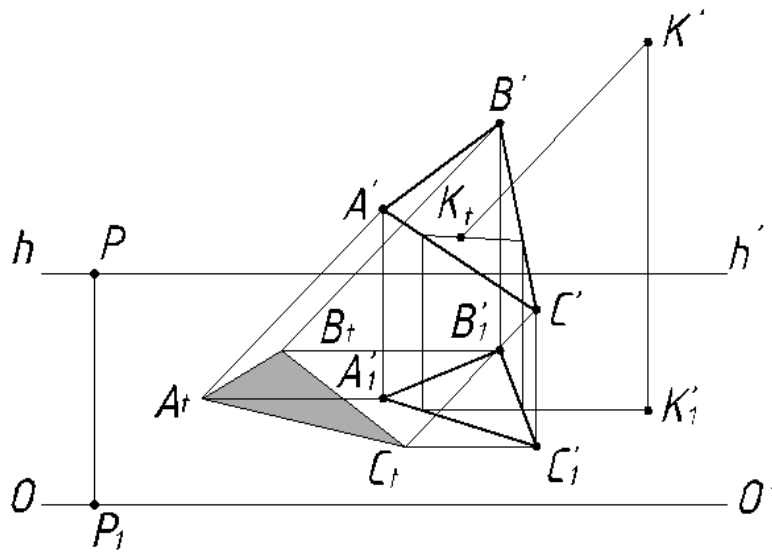

Figure 2

Shadow from a straight line to a plane and a surface.

Figure 3

A shadow is drawn from a vertical straight line to a vertical plane. The shadow is parallel to the straightest one. The sun is on the right side.
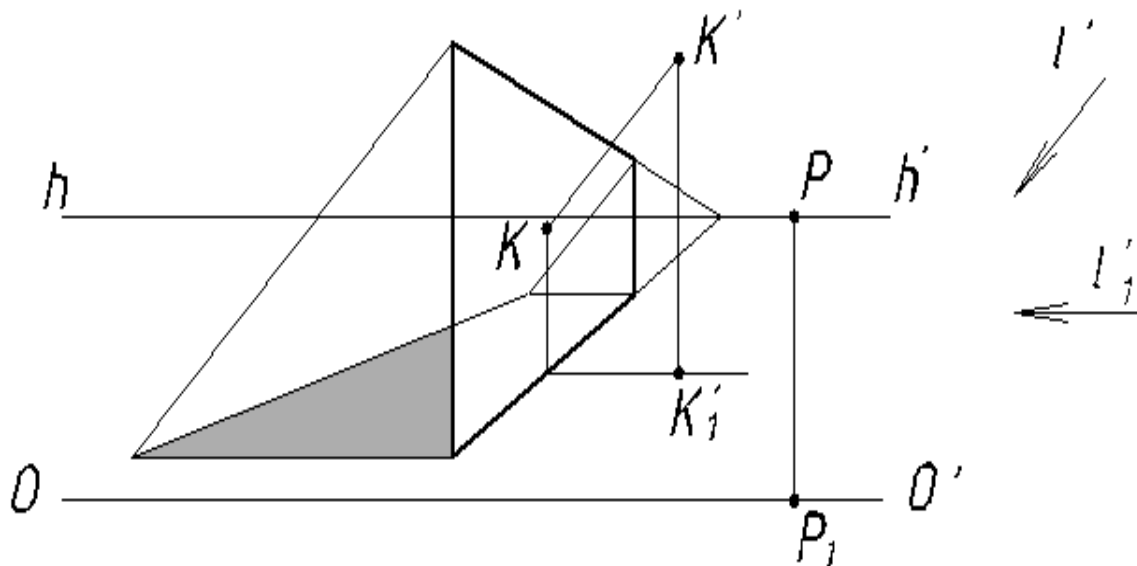

Figure 3

Figure 4

A shadow is drawn from a vertical line to a plane of general position. The shadow is constructed using the auxiliary cut plane Σ.
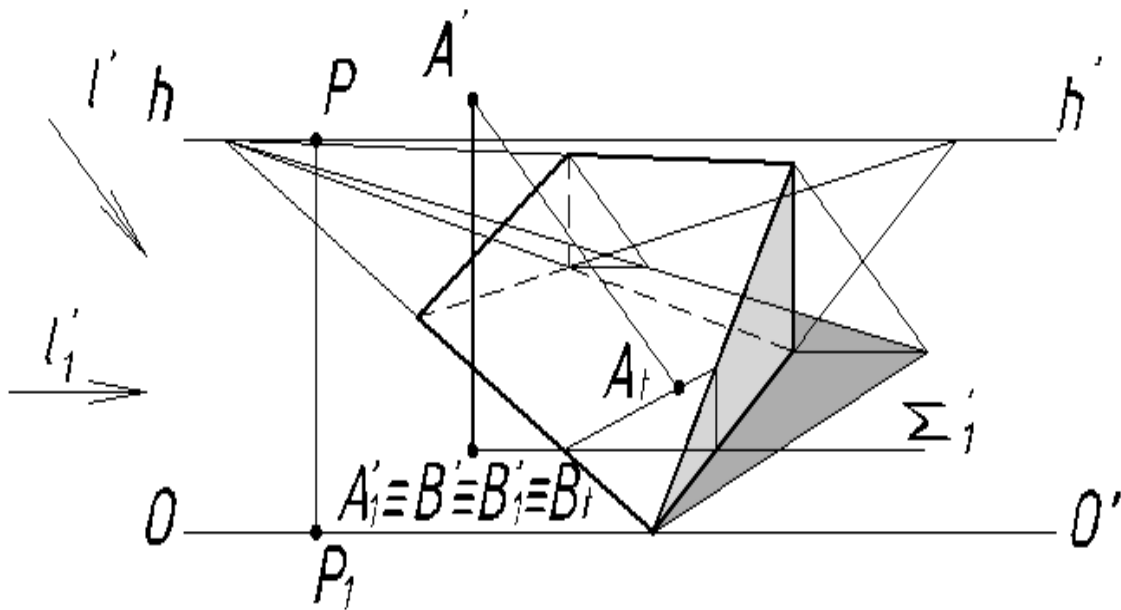
Figure 4

Figure 5

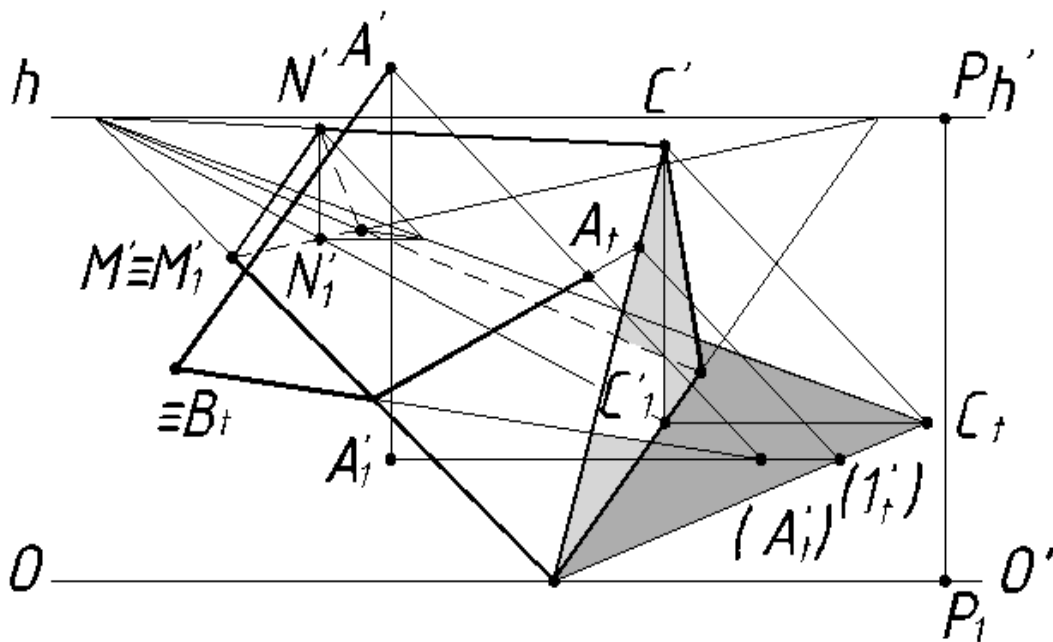A shadow from the straight general position of AB on a prism by the reverse beam method is constructed.

Figure 5

The shadow of the line on the plane $P1$ is $B't$ $_{(A't)}$.

On the plane $P1$, the shadow falls to the intersection with the prism. To draw a shadow on a prism, *continue the shadow* B'_t $_{(A't)}$ $_{\text{to the intersection with the shadow}}$ $K't$ C' t from the edge *of* the CS. The resulting *point ($1'_t$) is projected with a reverse beam onto the straight CS and connected to the break point of the shadow of the line. On the ray passing through point* A', *we find* $A't$.

Drop shadows from surfaces on the surface. Let's look at the construction of shadows falling from surfaces on the surface using the example of drawing shadows on the plan, the façade of a building, and building fragments.

Figure 6

The own and falling shadows of the conditional building have been built. The position of the sun on the left side.
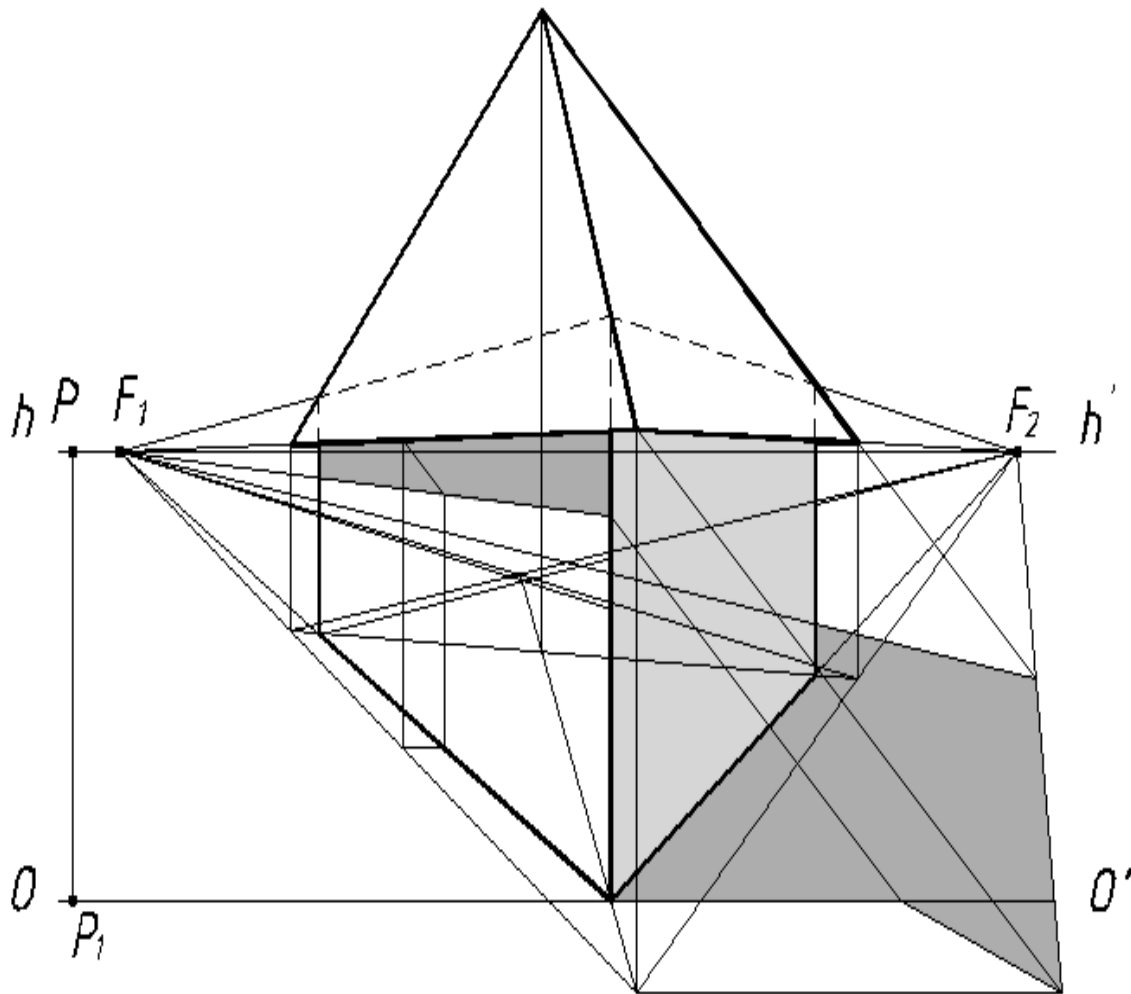

Figure 6

The shadow on the façade from the roof eaves is built as the shadow from the straight parallel plane of the wall.

The shadows falling from the building and the roof are constructed as shadows from the contour of the building's own shadows and the roof, and the eigenshadows are constructed as the proper shadows of the prism and pyramid.

Figure 7

A shadow from the chimney was built on the roof plane. The shadow is constructed using auxiliary cut planes.
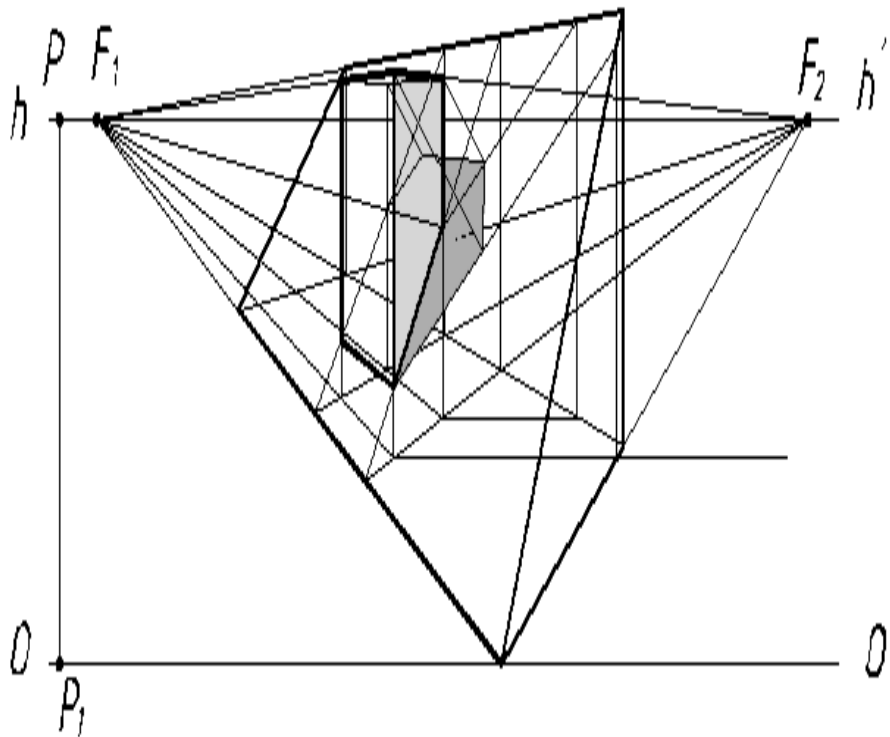
Figure 7

Figure 8
A shadow is built from one part of the conditional building to the other. The drop shadows are constructed using the method of auxiliary cut planes and the return beam.
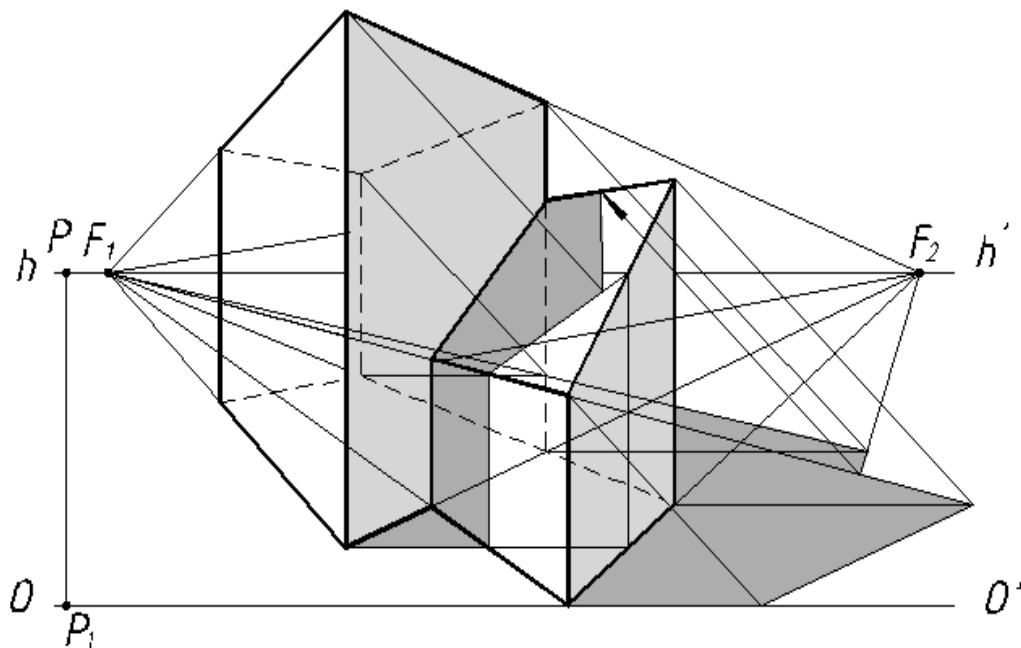

Figure 8

Figure 9

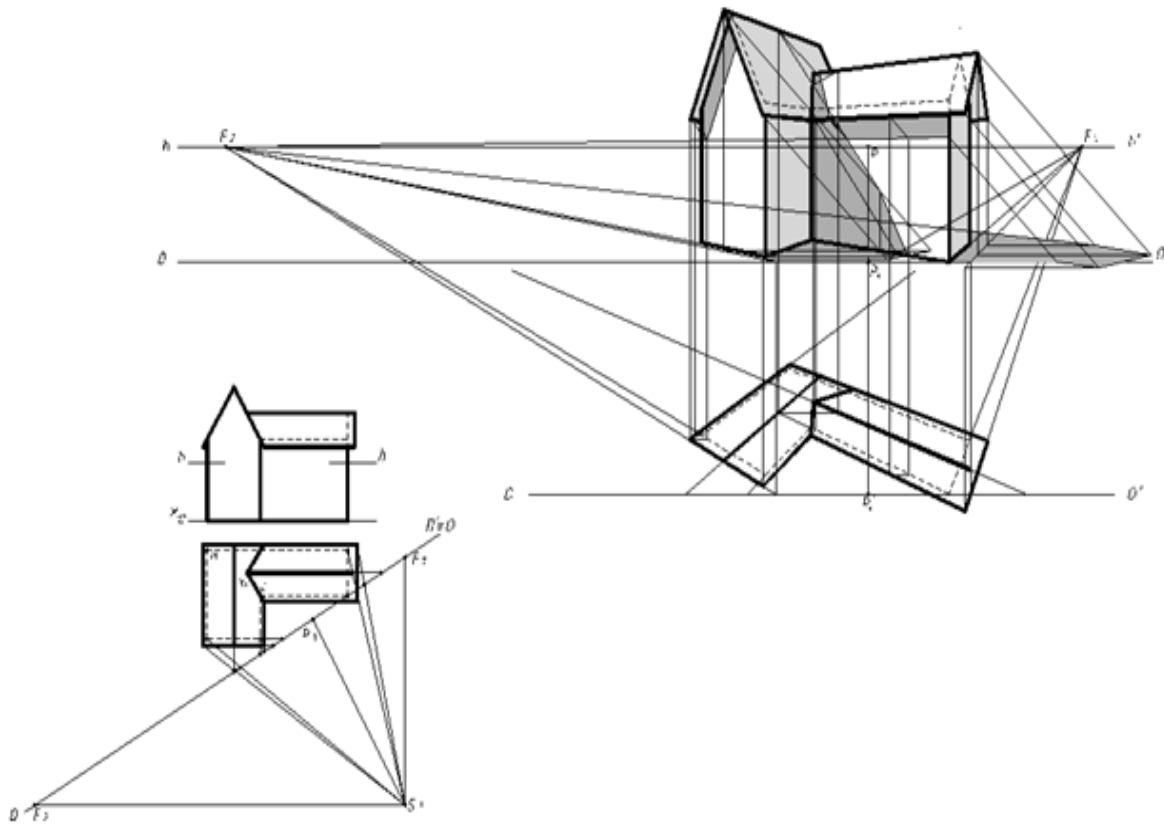Built a shadow in the perspective of the building

Figure 9

First, we determine whether the slope of the high part of the building is in its own shadow. Draw a shadow from an arbitrary point, in this case from point A, to the object plane. The slope of the roof is in its own shadow. Next, we will draw the shadow of the ridge AD falling on the roof of the extension, and the shadow of the nearest overhang of the AC of the high roof on the wall of the extension. The horizontal trace of the ray plane intersects the secondary projection of the extension at points 1 and 2. Let's find these points on the perspective of the eaves and ridge of the extension – points 1' and 2'. At the intersection of the ray from point A with this line 1' 2' and the shadow of point A t will be marked. Shadow of the AD ridge on the roof of the extension. Let's draw a shadow from point C to the wall of the extension – point C t . Point C is the intersection of two segments: the overhang AC and the overhang CM. The AC segment is parallel to the wall of the extension, which means that its shadow will be parallel to it, and in the perspective, these two lines will have a common vanishing point above the horizon. The choice of the angle of inclination of the light beam is related to the structure of the building, and the main task in this case is to give the most visual graphic representation of all architectural and structural elements on the drawing plane.

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