Changing the position of a light source illuminating a human face induces an apparent shift of the perceived orientation of that face. The direction of this apparent shift is opposite to the shift of the light source. We demonstrated that illumination-induced apparent orientation shift (IAOS), quantified it in terms of the physical orientation shift needed to compensate for it, and evaluated the results in the context of possible mechanisms underlying orientation judgment. Results indicate that IAOS depends not only on the angle between the two light source positions, but also on the mean orientation of the face. Availability of cues coded in the visual texture of the face did not affect IAOS. The most effective cue was the location of the visible outline of the face. IAOS seems to be due to a shift of this outline when shadowed areas of the face merge with the black background. We conclude that an important mechanism for orientation judgment is based on a comparison of visible parts left and right of the profile line.