

Architectural epistemology, existing buildings, and single-image modeling

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This paper examines an alternative approach to creating a 3D digital model of an existing building on the basis of a single photograph. Rather than prioritizing comprehensive coverage or geometric accuracy, the method aims to highlight how the modelmaking process itself can generate architecturally specific knowledge. The paper describes modeling the Nishiki Market in Kyoto using principles of projective geometry and reverse perspective. By problematizing the construction process, the method discloses how a model may embody subjective interpretations and choices. The paper argues that this approach legitimizes producing models counter to prevailing conventions, as the process itself constitutes a form of situational architectural understanding, registered through traces of the modelmaker and the photograph's perspective. Rather than foregrounding usefulness, this method values uncovering hidden assumptions and exposing the contingencies involved in constructing architectural knowledge.

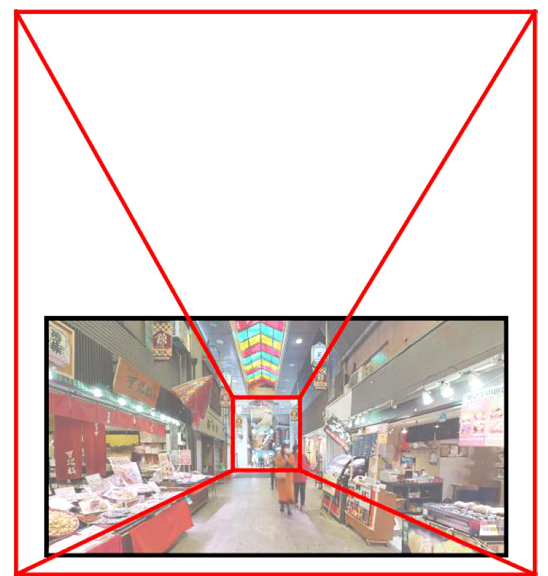
Funder: Digital Design Center.



(a)



(b)



(c)

Figure 1. (a). Original photograph of Nishiki Market. (b) Manual tracing of broadly-apparent features. (c) Extension of traced features beyond photograph edges, producing 2D image of rectangular volume V.

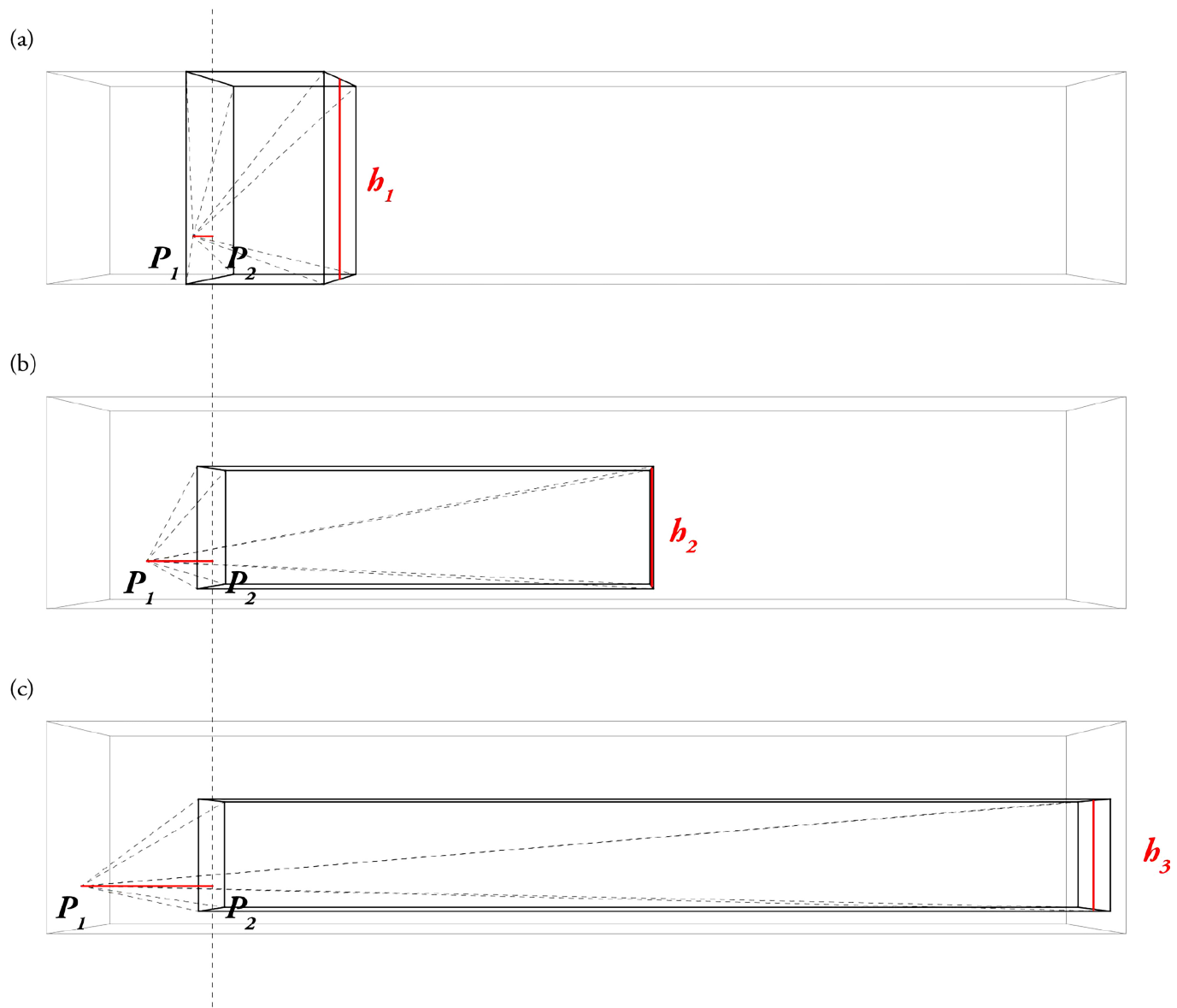


Figure 2. Changing the location of P1 changes the proportions of the modeled space. In (a), with P1 and P2 “too close,” the model appears visibly foreshortened and excessively tall for its length. In (c), with P1 and P2 “too far” from each other, the model appears excessively elongated, and too short. (b) appears to strike a reasonable balance

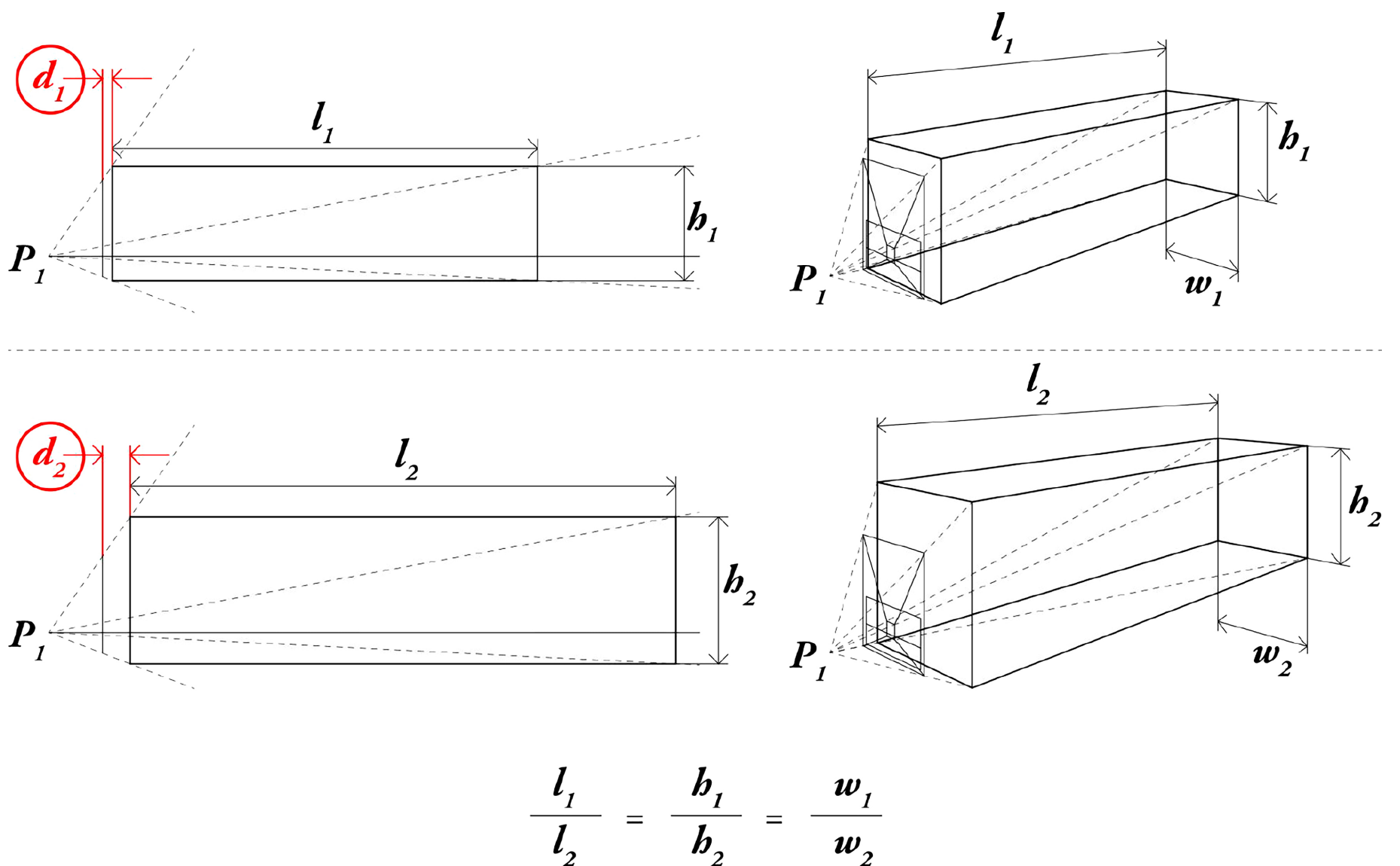
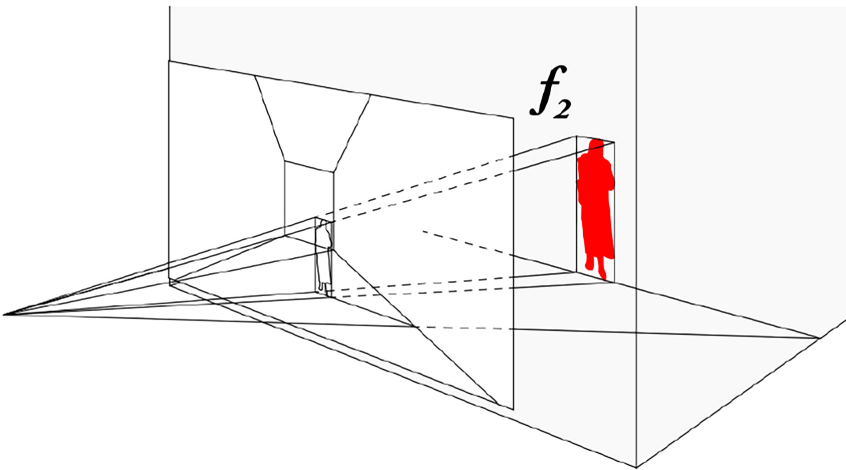


Figure 3. Varying the near-plane location has an equiproportional effect on the model.

(a)



(b)

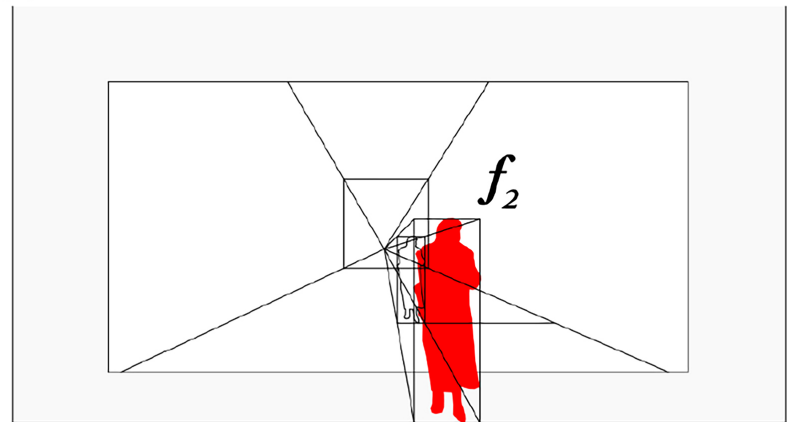


Figure 4. Placement of human-figure silhouette within 3D space. (a) Perspective view of model. (b) Front view of model.

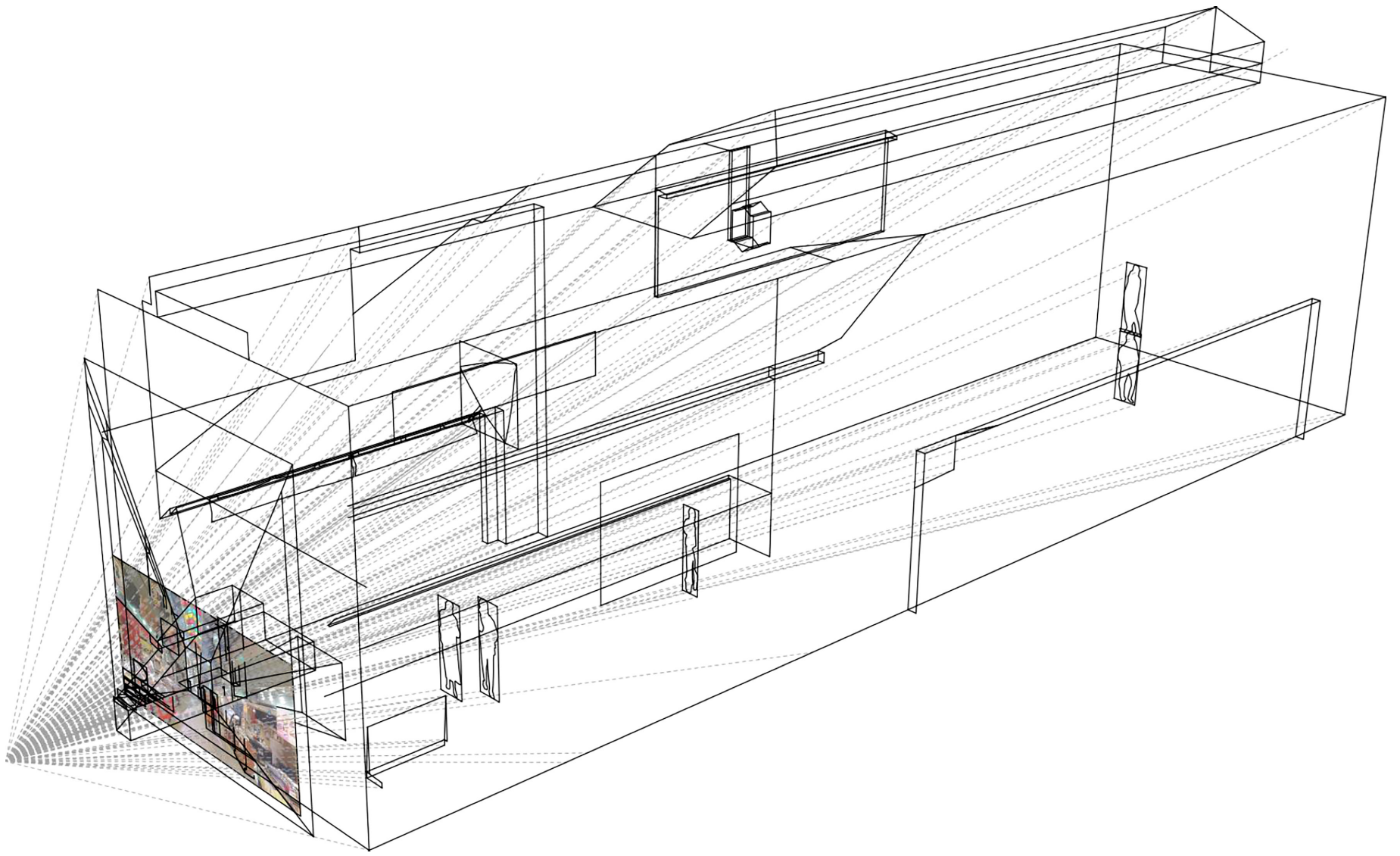


Figure 5. Completed model.

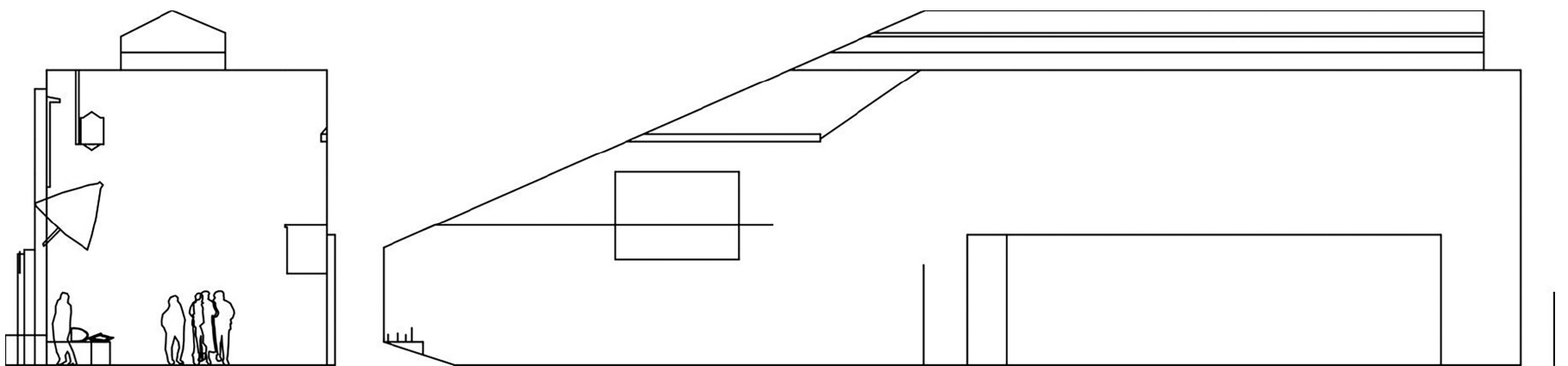


Figure 6. Derived views (elevations) of the finished model.