GT STUDIO

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Studio Name ABRUZZO BODZIAK ARCHITECTS llc

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Project Name 100 Straight Skeletons

Project Description (How are you going about it now? How would you like to approach it differently? What type of materials are you employing?)

In the recent years of America's housing boom, as houses grew larger and squarer and plans more complex, a challenge arose: how to cover these large buildings in a way that was pleasing - approximating the pitched roofs of America's true colonial architecture. (see figure 1.1) What remains a little-known geometrical oddity, the "Straight Skeleton" has been employed to this end: as a tool by which builders and contractors have been able to quickly resolve the often complex roof shapes typical to "Mc-Mansion" type subdivision homes.

First defined by Oswin Aichholzer and Franz Aurenhammer at Graz University of Technology in Austria, the Straight Skeleton uses a continuous geometric shrinking process wherein the edges of a polygon are moved inwards parallel to themselves at a constant offset. As the edges move in, the vertices where pairs of edges meet also move, at intervals that depend on the angle of the vertex. If one of these moving vertices collides with a nonadjacent edge, the polygon is split in two by the collision, and the process continues again. The Straight Skeleton is the set of lines traced out by the moving vertices in this process. (see figure 1.2)

Utilizing standard shop-fabricated trusses (see figure 1.3) to make the resulting skeleton, these "Mc-Mansion" roof forms are economical yet geometrically rich if not absurdly proportioned in relation to their historical references. We propose an investigation of Straight Skeleton design, divorced from its simple use in subdivision roofing. A method capable of producing elegant forms which are at once new, but remain grounded in a process which allows for simple fabrication, we would like to explore the Straight Skeleton to its ends. Our investigation will focus on how this methodology, currently used in service of faux-traditional means, might suggest a new, genuine, architecture of careful invention and economy.

Our goal will be to create a design process using Digital Project that will execute the Straight Skeleton algorithm and compute the corresponding truss design in an efficient and accurate way, thus enabling experimentation and rapid realization of countless design iterations.

Subsequently, we will fabricate a series of studies exploring the rich new geometrical possibilities made possible through the software's employ: 100 in all, varying in complexity from a simple polygon to a densely faceted form. These studies will be 3d milled or cast in plaster (from milled molds) for an installation. We will work with local galleries and institutions to find an appropriate venue to bring our investigations to the public.

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Figure 1.1

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Figure 1.2

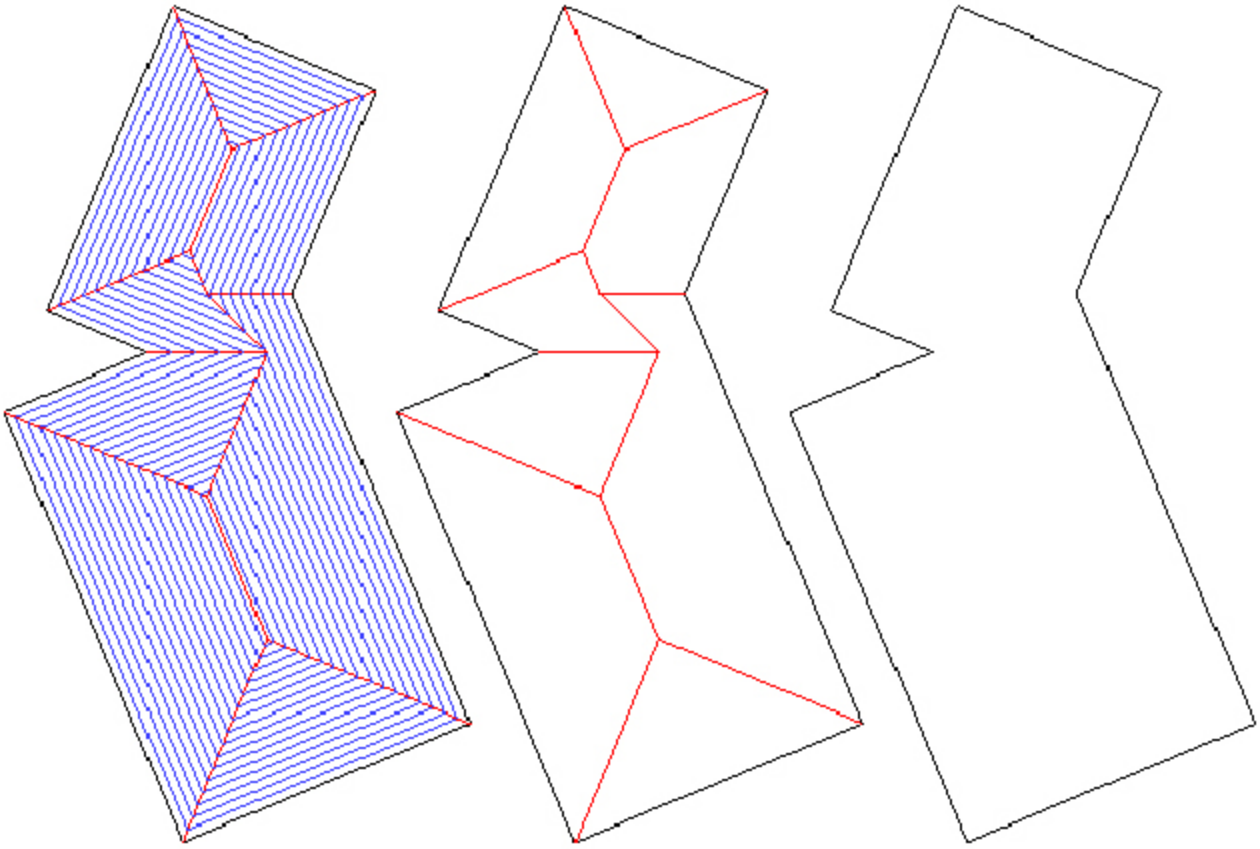

Diagram your problem

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Figure 1.3