The “sloping vault” is not \textit{a priori} the most difficult mortarless piece of the stereotomic repertoire. Squinches, domes, spiral staircases in the style of the \textit{vis de Saint-Gilles}, or vault penetrations are no doubt more difficult pieces to carve and, as is often the case, to draw.

However, the sloping vault poses greater representation problems, due to the choice of reference system, and allows one to grasp the methods authors use to approach a mortarless piece of architecture, if indeed they use a method. The sloping vault offers numerous solutions and, as we shall see later, many opportunities for making mistakes, which are

Fig. 13.1: A sloping vault, drawing from A. Bosse in [1], pl. 2.
always more revealing about the methods employed than correct drawings. It must be added that the choice of “sloping vaults” is not mine to begin with but Girard Desargues’. A 17th century mathematician and architect, this author is indeed partly characterized by having written a small opuscule entirely devoted to the study of this particular vault. If Desargues claims to present a “universal method” and only studies one vault, it is because, as I shall try to demonstrate, the corresponding blueprint indeed offers great geometrical wealth.

The authors

Before giving a detailed description of the mortarless architectural piece that will serve as a guide in this study, I would like to justify briefly why I chose the authors I wish to study, besides Desargues. The treatises of Philibert de l’Orme, Jousse, Derand and Frézier are, together with that of Jean-Baptiste de La Rue, the major French treatises on stereotomy. Hence it is not the presence of the first four that must be justified but rather the absence of the latter, and, to a lesser extent, that of Bosse or Millet de Challes. The reason for this is simple: the five authors chosen all study sloping vaults and present radically different solutions whereas the other authors only reuse one of their predecessors’ solutions, at least in this particular instance.

Philibert de l’Orme

Philibert de l’Orme (1514–1570) is one of the most famous French architects, for both his built and written opus, as well as his influence on the history of architecture. He did not publish, as did his successors, a treatise on stone carving but a treatise on architecture [cf. 10], in which Books III and IV are devoted to stereotomy, a construction technique that is given its rightful place in his global theory on architecture. He thus inaugurated a new conception of treatises since, as he put it, “geometrical drawing [has] been used in architecture neither by the men of antiquity nor those of modern times” [10, Fol. 87].

Desargues

Although he was also an engineer and an architect, Desargues (1591–1661) has above all remained famous for his mathematical opus. His main contribution, the *Brouillon projet d’atteinte aux événements des*