

Example of research paper on technical drawing and orthographic projection

[Engineering](#), [Aviation](#)



The term ' technical drawing' in the field of engineering, also referred to as ' engineering drawing' mainly relates to the different dimensional views of an object from an engineering perspective. There are two types of dimensional object planes - 2-D projection and 3-D projections. 3-D projections provide three views of one object, where in 2-D lines are perpendicularly extended to a point where there is to be a projection. This type of three dimensional projection of an object is known as orthographical projection. This type of technical drawing done using orthographic projection was also known as an ' outside the box' approach, mainly due to its three dimensional nature.

In the history of orthographic projections, Gaspard Monge's name is heavily mentioned. Gaspard Monge was a well-known mathematician in the field of geometric mathematics. He laid the foundations to modern geometry and differential mathematics. He is known as a pioneer for the approach of the orthographical projections as well as the founder of descriptive geometry. Monge was an engineer in the French Military, wherein he invented a communication system that could pass along an article anywhere in the world. This was implemented in the design of a military armory. It comprised of a graphical representation of solid objects, using two project planes that are orthogonal to each other. This system was known as Descriptive Geometry and formed the crux of Orthographic Projection. Thus, the development of such a technique that can be used to unambiguously, accurately and graphically analyze the lateral as well as adjacent views of a graphically object in the real world is generally credited to Gaspard Monge. Though he developed it in the early Eighteenth century, due to political as well as military reasons, it didn't come out to the world as published articles

until the nineteenth century. Monge's original right angle planes were further modified to four quadrants, with the first and third space containing the object to be represented.

Figure 1. Orthographic Projections

Orthographic projections are primarily used in technical sketches for engineering graphics and the visualization of solids. This is because technical graphics are dependent on projections. They consist of principles to extrude 3-D structures in a 2-D media. This is extremely helpful for pictorial illustrations of design and details – especially in the modern engineering industries like the automobile industry. Albrecht Dürer was the first person to depict the 3-D objects in a 2-D plane in the form of multiview drawings in the early 15th century. The drawings were orthogonal and perpendicular to the plane, just like the orthogonal projections today. Gaspard Monge refined this projection system in 1795 and made it more useful. His book, 'An Elementary Treatise on Descriptive Geometry' published in 1795 on orthographic projections revolutionized the world of engineering mathematics.

References

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