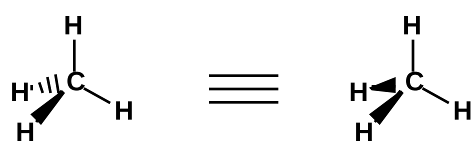
Text Related to Segment 1.02 ©2002 Claude E. Wintner

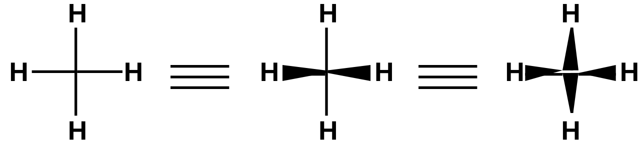
The study of organic chemistry is concerned with two very broad, yet at the same time closely interrelated, groups of issues. On the one hand, we are interested in the structures — the shapes — of organic molecules. On the other, we study the reactions that organic molecules undergo, in an effort to comprehend the mechanisms of these transformations. The result is an enhanced ability to manipulate molecules by means of the reactions, for example, in organic synthesis. Mechanism is, inevitably, a function of structure. Thus, it is basic to any consideration of organic chemistry that we be grounded in an understanding of some concepts of structure and stereochemistry.

A model of methane may be represented by either of the "three-dimensional" formulae:



Generally in the text we will adhere to the convention, exemplified by the right-hand formula, which employs solid wedges only. The thick end of a wedge always is to be understood as being closer to the observer than the pointed end.

Projecting the model of the methane tetrahedron into two dimensions, we may write the alternative (Fischer projection) formulae:



The three graphical variations shown — with or without wedges — are used interchangeably to convey the same message regarding the spatial relationships of the atoms in methane. It is understood that *in this convention* the central carbon atom lies in the plane of the paper, the two hydrogen atoms on the *horizontal* bonds are *closer* to the observer than the plane of the paper, and the two hydrogen atoms on the *vertical* bonds are *farther* from the observer than the plane of the paper.