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Abstract
During the end of the 19th century the construction of physical models in mathematics and chemistry was an integral part of research. The question of translation in both of these domains rises, when one considers these visual-haptic models as transmitting knowledge that should be translated into scriptural formulas, being either mathematical or chemical.

The paper would concentrate on two failed attempts to translate this non-verbal, non-written material into formulas: the developable surface of the mathematician Christian Wiener (1826-1896) and the chemical models of Hermann Sachse (1862-1893). Dealing with surfaces Wiener emphasized in his book Lehrbuch der darstellenden Geometrie a possible translation between the mathematical formula for these surfaces together with a construction of a physical model for it. However, when dealing with a generalization of developable surfaces, this translation reaches its limits: Wiener presents an equation of a surface for which no model can be built. Sachse, inspired from van 't Hoff’s models, proposed a physical three-dimensional model for the structure of benzene. He based this model on mathematical “paper tools”, prompting a translation between mathematical formulas into a visual-haptic model. But this reduction of chemical theory to mathematical physics was rejected at that time by the chemists.

I would like to examine these two modi of failure of translation from the mathematical to the physical models: I suggest that this failed translations points towards the epistemic boundaries of these disciplines. While most chemists were concerned to remain on the positive level of empirically-known facts and models, and not engage in speculation via mathematics, Wiener’s example has shown the opposite – that there are mathematical inscriptions which cannot be translated into an empirical, physical model. From that point of view, translation determines also the boundaries of scientific practices.