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Visual Learning, Design, and Invention in Leibniz

Learning and understanding begins with seeing. The modern view that understanding and human creativity requires signs as forms of expression can be traced to Leibniz. From 1672 through 1676 Leibniz pursued his mathematical studies in Paris. During this period Leibniz's conception of signs undergoes an important transformation. Leibniz comes to see that the knowledge available to human beings is almost always articulated by language or written signs. In particular, signs, perceptible marks, or characters and different forms of "inscriptions" are needed to guide our reasoning. Moreover, gaining access to knowledge, even in the case of the intelligible things of mathematics, requires drawing, designing, and improving notations to be visually examined. For Leibniz, the need for such tangible "instruments" stems from human embodiment, for human beings can have no sustained knowledge of intelligible things without material instruments and the corresponding techniques for using them successfully.

Focusing on the importance of seeing for learning and understanding in the case of Leibniz's mathematical practice, I will discuss some specific cases of particular interest to the conference's themes.

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