Otte, Michael

Mathematical epistemology from a Peircean semiotic point of view.

Learning is better than knowing, generalization is more illuminating than abstract generality or universality because we perceive and thus become conscious of change or development only. Signs and representations establish the dialectic of fixation on the one hand and transformation on the other, which is so essential to learning and cognition. Mathematical epistemology from a semiotic point of view therefore is above all a genetical epistemology. All real mathematical activity is concerned with representations of mathematical entities rather than with things in themselves and with the processes of continuous transformation of a given representation into others. This paper tries to give an overview of the essential relationships between activity theory, epistemology and mathematical education, using the semiotics of Charles S. Peirce as a unifying reference. It is certainly beyond the scope of such a paper to spell out all the questions involved in every detail. Much of what is said in the four short sections to follow is calling for further concretization and research. (orig.)

Classification: E20 E40 D20
Keywords: complementarity of mathematical terms; genetic epistemology; semiotics (Peirce); phenomenology (Peirce); meaning; sign; mathematics and philosophy; theory of mathematics education
doi:10.1007/s10649-006-0082-6