Diagrammatic Logic: Inserting Icons in Existential Graphs

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Abstract. Peirce's vision of existential graphs as "a moving picture of the action of the mind in thought" can be realized by inserting icons in any EG and applying his rules of inference to the icons. Lines of identity from an EG may be iterated into or deiterated from a icon in the same area as the EG. Two additional rules of inference are required: observation and imagination. The rule of observation allows an EG implied by an icon to be inserted or erased from the area in which that icon occurs. The rule of imagination allows an icon that is implied by an EG to be inserted or erased from the same area in which that EG occurs. The rules of observation and imagination are formal and sound for icons (such as Euclid's) that are precisely described by the EG. For more complex icons, the rules may be approximations. For certain kinds of icons, the rule of observation may serve as an oracle, which Turing said may support reasoning that goes beyond the power of a purely algorithmic Turing machine.

A talk based on this forthcoming paper will be presented at a symposium on existential graphs on 30 November 2016. For an overview of the basic ideas, see the following slides, which have some overlap with this talk: http://www.jfsowa.com/talks/ppe.pdf