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# **Multi-disciplinary Study of Logic: Towards a More Powerful Logic**

by

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Proposal TDM 2011

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Date of Submission: January 17, 2014

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## Abstract

Logic is a mathematical language that can describe facts as mathematical propositions and allows us to formally derive new propositions from ones that we formally have. It helps in answering interesting questions about the reality we are describing. [1, p 35] Logic's approach based on mathematical principles and formal calculi allows us to make not just verifiable but also provable inferences about our observations of reality. Such a powerful tool to understand reality is therefore a seemingly plausible tool in our day to day struggles in discerning, appreciating or rejecting ideas and facts. Logic studies representation and inference systems with a minimal mathematical language and tools best suited for its scope. Nevertheless, we tend to remain strictly logical in many areas and issues where it is, paradoxically enough, not logical to do so. In such cases, applying logical thinking has problems in our understanding of things that require aspects of intelligence other than just logic.

Logic and psychology went their separate ways after attacks on logical psychologism by Frege and Husserl [2], who were fighting to have logic secluded for mathematical study. To be able to claim logic to be a tool to describe and make inferences of reality, logic should have been studied through multidisciplinary perspectives and not the mathematical objective of making inferences and definitive conclusions. Logical language is by design too minimal to house semantic structures other than just mimetic representations of objects in the real world. Therefore logic is at its best making rational conclusions but not really describing anything other than conclusions derived from initial observations. Consequentially, logic places more emphasis on inference not on appreciation, critique, creativity, cognition, exploration of the unobservable or faith-based construal of the world.

Logic is a cognitive construct of rational animals (including humans) [2] and rationality is an important part of what we consider intelligence. As a consequence, logic is always favored over creativity as is a programmers job more valuable than an artists' in many countries. Logic has also become more persistent and prevalent than emotions, creativity, lateral thinking, and faith-based decision making in cases with no initial observations. Creative thinking requires leaps of imagination and fictional imaginations which get restricted once we start to be too logical or scientifically accurate. Logic does not allow for semiotic analysis of its results because its semantics are mimetic not structural. The description of reality provided by logic is not a complete picture as this language does not have any connotations, contextual, emotional, syntactic or pragmatic aspect in it but is rather just a semantic one-to-one mapping of representations and objects of the real world. Logic is also by nature self-serving since to question logical thinking is to be illogical and 'illogical' is now equivalent to 'wrong' or a disparaged label. Higher intelligence is thus roadblocked in its quest for knowledge because of these limitations of logic. Primarily, we only know the mathematical aspects of the world and have thus not yet been able to have bigger picture. We will demonstrate this through examples and statistical evidence in this paper and conclude that logic should be a multidisciplinary pursuit not just a mathematical one to become stronger than what it is currently.

## References

- [1] Beaudin Kohlhase. Formal logic as the mathematics of meaning. In *From the Textual to the Technological: Documents and Structure in a Digital Age USC 020059 Lecture Notes*, pages 36–37, 2014.
- [2] Robert Hanna. Rationality and logic. <http://mitpress.mit.edu/books/rationality-and-logic>. [Online; accessed 16-Jan-2014].