

The generality of mathematics

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From: Jamie Vicary (jamievicary_at_gmail.com)

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Dear all,

Is mathematics completely general? Can all possible algebraic structures be represented by the mathematical structures which we use today? It seems to me that modern mathematics is not really very general at all. Much of algebra is dominated by the notion that objects can be operated on from the left, and from the right. Why not other "directions"? Why not conceive of a set of objects which operate on each other in a much more general sense?

Most importantly, does there exist a proof that ANY possible structure between a set of objects is equivalent to some structure that can be formed using the formalism of modern mathematics? If such a proof does not exist, why have we not developed a branch of mathematics which CAN, in principle, deal with all conceivable types of structure between objects?

Jamie Vicary.