Media Theory

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This paper reviews and extends previous results of the first author concerning a particular semigroup of transformations on a finite set of states. While these
transformations are never one-to-one functions, each transformation has a unique 'reverse' transformation undoing its actions. We also require the semigroup to be
transitive: any state can be transformed into any other state. Two other axioms ensure the consistency of the transformations producing a state. The resulting
semigroup is called a 'medium'. Applications of media are many and diverse, ranging from convex analysis to combinatorics and political sciences. For example,
the family of all strict partial orders on a finite set, equipped with the set of transformations consisting in adding (or removing) an ordered pair to (or from) a partial
order to form another partial order is an instance of a medium. We introduce the concepts of 'orientation' and of 'closure' for a medium and derive some
consequences. An application of media theory to the analysis of opinion polls data is briefly discussed.