ABSTRACT

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Title: Responsibility for Designing Analytical Models/Methods: OPS, IT or AI

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Analysis, preferred over analytics (study of analysis), is being rehabilitated as a tool for decision-making and resource allocation. Those of us who learned Management Science/Operations Research/Systems Analysis in the 60s have argued since that time that analytical modeling has been underutilized. Now the presence of extensive data (Big Data), collected by sensor and other devices, embedded in an Internet of Things (IOT) stimulates more analysis, but only can be justified if modeled and analyzed – correctly.

The principal question of this research is the relative roles, across a "life cycle of analytic thinking", for Operations (OPS), or other functional managers, Information Technology professionals (IT) or Artificial Intelligence (AI)/Machine Learning (ML) applications. This research expects OPS to be responsible for modeling production systems and building analytical models and methods, with IT acting to collect data, store information, develop computational programs (code) and process the "analytics" to generate results that suggest recommendations for functional users. The arrival of AI raises the question and choice as to whether an "intelligent" application can replace both OPS and IT professionals in designing models/methods, creating code, applying data and calculating results.

This exploration of analytics demands credible "thinking and computing", confirmed by two tests – *Validity and Rationality.* These tests are explained and defended in this research. OPS analysts are also expected to utilize basic and advanced analytics while "Data Scientists" ensure programs (code) produce correct analytical results.

Teamwork among OPS and IT is explored with team objectives to determine *validity* for systems models and mathematical methods as well as to evaluate the *rationality* or achievement of system outcomes predicted when accepting and implementing recommendations provided. Of course, advanced analytics must be present and include random variables and credible probability analysis. This author is not convinced AI can ever learn OPS, MS/OR and the production system on its own, without substantial human contribution in designing and coding.

Hypothesis: Humans are more comprehensively rational than machines can ever learn to be.