Appraisal theory and the advent of quantum computers - by Roger Durkin

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There is a radical rapid change coming to appraisal methodology in the form of quantum computers, algorithms, and artificial intelligence.

Appraisers need to get up to date with statistical modeling and away from cookie-cutter appraisals. Appraisers must adopt this, soon-to-be here, analytical methodology.

An algorithm is a well-defined procedure that enables a computer to solve a problem. An algorithm is a sequence of unambiguous instructions. The use of the term ‘unambiguous’ indicates that there is no room for subjective interpretation. AVMs use algorithms, formulas that estimate the value of a house based on hundreds of pieces of data. (1) Quantum computers are coming and will have the ability to complete complex calculations on an order of magnitude over current computers. (2) This will make calculations that traditional computers are unable to do. Quantum computing is a giant leap forward in computing capability, far greater than from the abacus to a modern computer. Artificial intelligence (AI) will make machine learning more powerful for the analysis of large appraisal datasets.

The foundation of appraisal practice and analysis of asset valuation evolved directly from the academic discipline of economics. The theoretical concepts and quantitative procedures that represent asset valuation are applied microeconomics. The collective body of valuation theory and practice (3) dates to the classical economist Adam Smith and to his 1776 treatise The Wealth of Nations. The study of economic relationships has greatly expanded and been refined over the centuries. (4) There have been outstanding appraisal theorists who have contributed significantly to improving appraisal theory and methods. Benjamin Graham and David Dodd’s 1934 treatise, Security Analysis. James A. Graaskamp (1933-1988), was the chair of Real Estate Economics at the University of Wisconsin. (5) He was a leading-edge appraisal theorist. (6) Another modern leading edge appraisal theorist is George Dell, SRA, MAI, ASA, CRE. Dell is an econometrician who developed Dell challenges traditional appraisal practice and the use of three or four “samples” in the comparable sale approach in favor of statistical analysis of large data sets. Dell advocates an approach to using large data-based statistics and algorithms instead of simple inferential statistics. He notes there is a legacy error stemming from inertia within the appraisal profession.

The three approaches to value are at best an archaic theory developed in the depression-era as a political compromise between banks who wanted a cost approach, financial analysts who wanted an income approach, and Realtors who wanted only a comparable sales approach. The Appraisal Institute (7) first required averaging the 3-approaches, then required weighing the 3-approaches, and now require appraisers to always “consider” the holy trinity of 3-approaches. Frederick Babcock (1941-1973) (8) criticized the use of three approaches as far back as the 1930s. Illustrating the confusing and illogical three-approach mandate is USPAP Standard (8)(a) viii that requires fine arts, coin, stamp, antique, machinery, equipment, jewelry appraisers to disclose “the exclusion of the sales comparison approach, cost approach, or income approach must be explained; Business valuation Standard Rule 10-2(a) (ix) requires the business appraiser must explain the “exclusion of the market approach, asset-based (cost) approach, or income approach must be explained”. It is time to challenge these illogical, irrelevant, and immaterial appraisal methods. USPAP content continues to be dominated by antiquated real property theory and methods.

A major reason for the slow progress in accepting improved appraisal methodology is the number of appraisal associations who each have their own brand of appraisal standards. There are seventeen plus appraisal designations in real property, eleven in business valuation, and ten or more in personal property. Each group claiming preeminence in performance. Each group interprets appraisal theory and USPAP in accordance with their own sanctified tome. Business valuation groups, including CPAs, CFAs, ASAs, and CBVs, generally adhere to a mix of proprietary standards. And the professional appraisal associations ineffectively police their own proprietary standard or USPAP. Review appraisers in all disciplines have difficulty policing appraisal work because there is ambiguity in the rules and differences in opinion as to what is proper.

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