Not Even Garbage

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Summary

When combining the general theme of this conference with this sessions theme of innovative approaches to valuing unregistered land, the current front-of-mind question may be the role of technologies in that space, particularly in resilient collaboration, and particularly the potential roles of Artificial Intelligence (AI). There are a couple of phrases that are relevant to the theme of applying to contexts in general, and to we valuers in particular looking to engage AI to assist in delivering transparent and accountable valuations of unregistered land.

The first, “not even wrong”, describes an argument or explanation that may at first seem scientific but is based on unfalsifiable premises or is itself unfalsifiable and, thereby, unscientific. The second, “garbage in, garbage out” (GIGO) refers to a problem with merely mechanical thinking, be it from genuine or artificial intelligence. In such contexts, answering a question that is based on false premises will automatically provide false answers, even if its internal logic is irrefutable. Moreover, if a question open to various interpretations, its answers will also be open to error.

This paper in premised upon the view that the potential application of artificial intelligence to valuations of unregistered land holds great promise for benefit of all affected parties if the above is both kept front of mind throughout the whole process and competently monitored and evaluated, and great danger of the ruination of that promise if it is not.

A further premise is that while the requirements of the market value definition correctly exclude solely mechanical valuations”, in open transparent and developed markets where information is plentiful and competently vetted, mechanical

valuations have an already proven fitness for purpose. AI will probably further refine the accuracy in such markets, but the most significant need globally is in closed, opaque and unaccountable markets such as those in many megacities.

In such places, there may be little data, no sufficiently reliable information derivable from it, so in turn no firm knowledge derivable from that, and hence no intrinsically valuable understanding by relevant assessing officers. Combining such circumstances with the "black box" nature of AI, even with the best will in the world from a scientific perspective the results may be "not even garbage".

It is in such environments where both the greatest dangers and opportunities lie, and this paper attempts to constructively examine that context with a view towards ultimately developing protocols towards determining the best that can be done at the relevant time and place, thereby developing from "not even garbage" if unthinkingly applied, towards involving, monitoring and evaluating AI as a means of optimising good governance in domains where that is most urgently required.

"Philosophy Eats AI: Generating sustainable business value with AI demands critical thinking about the disparate philosophies determining AI development, training, deployment, and use" (Schrage and Kiron, 2025).

This headline quote is from an article from what is ranked as one of the world's best business schools – Sloan – in what is ranked as one of the world's top universities – MIT. It arrived in my inbox only two days before this paper was due. The article is of such relevance that I ask you to please seek it out and read it!

1.0 Introduction

As the late W. Edwards Deming, once said, if you want to manage something, you must first define your terms (Gabor, 1990). That is because "[I]f a question is ill posed, ill stated, if the premises from which it issues cannot be accepted—then a direct answer to it will automatically be tantamount to falling into error (Panikkar 1989, p.11):

> "If you wish to converse with me," said Voltaire, "define your terms." How many a debate would have been deflated into a paragraph if the disputants had dared to define their terms! This is the alpha and omega of logic, the heart and soul of it, that every important term in serious discourse shall be subjected to the strictest scrutiny and definition. It is difficult, and ruthlessly tests the mind; but once done it is half of any task. (Durant 1961).

1.1 A Value Theory Framing

In 2003, the Journal of Real Estate Practice and Education published a paper entitled "Valuation without Value Theory: A North American ''Appraisal'" (Cannone and MacDonald 2003). After establishing their case concerning valuation having "feet of clay", they proposed a new science be established, which they called "Timology", which term they derived from the ancient Greek: *timi*, value, *timotistis* being a tax appraiser (ibid, p. 154).

The silence this proposal has been greeted with since then has not been total, but nearly. Yet I consider intellectually rigorous value theory, if not identical, to be at least of the nature called for by Cannone and MacDonald. I further consider that it will be preconditional to competently address the strengths, weaknesses, opportunities and threats Artificial Intelligence (AI) will present to our profession.

In so doing, however, to understand AI's potential role I consider it necessary to provide a broader canvas than the economic value that our profession is primarily concerned with in general, and within our role as "timotistises"(?) in particular, because AI's potential roles are far greater than is our role as economic valuers and lessons can be learnt by us from implementation of AI in other domains. As stated in the articled I have taken my headline from:

> *The critical enterprise challenge is whether leaders will possess the self-awareness and rigor to use philosophy as a resource for creating value with AI or default to tacit, unarticulated philosophical principles for their AI deployments. Either way — for better and worse — philosophy eats AI ... Philosophical perspectives on what AI models should achieve (teleology), what counts as knowledge (epistemology), and how AI represents reality (ontology) also shape value creation (Shrage and Kiron 2025).*

In our context, real rigour requires attaining a level of understanding in one's discipline sufficient for fruitful interdisciplinary co-operation, and engagement in understanding the general structure of human thought (Midgley, 1995, p.22). For value theory, Midgley's latter requirement requires a still broader framing: that of philosophy itself.

Together with axiology (the study of values), these philosophical disciplines can help us develop value theory, including by unearthing the assumptions and presumptions we bring to this table which, as the authorities quoted above have noted, require rigorous examination. Others have too, including Peter Drucker, who also noted that "Management is doing things right; leadership is doing the right things" which is also relevant in framing this context. What are the right things to do when

considering the application of artificial intelligence to valuations of unregistered land, and how are we to do them right?

I claim that when we are dealing with global issues, as we are here, to answer that question to the degree of complexity required to make an answer useful, we have to paint on such a broad canvas. That is because these four disciplines shape paradigms, and:

> "The requisite knowledge for the property discipline is reflected in the different paradigms that are in a position to deal with it, such as economics, finance, geography, engineering, highest and best use, city planning, brokerage, legal, and a multi-disciplinary approach. As Roulac states:
>
> > ***Effective property involvement employs multiple perspectives and skill sets to address the crucial questions for effective property involvements, and applies the capacity to reframe problems, select appropriate methodologies and tools, gather the requisite information, and be self-educating to learn what one needs to know to address the problems one encounters***.
>
> Roulac concludes that one must simultaneously be - and provide the perspective of - historian, behaviourist, global citizen, urban planner, geographer, business strategist, futurist, political economist, information specialist for one to be effective in property involvements" (Weber 2004, p. 7; emphasis Weber's).

Weber goes on to quote Thrall (2002) as defining "business geography as the process of integrating geographic analysis, reasoning, and technology for the improvement of the business judgmental decision, stating that market analysis is central to the evaluation of risk", and that "[t]oday the depth of knowledge required, and the expectations of the marketplace for professional high-level proficiency, precludes one from becoming a master of each and all" (ibid).

One of the areas where many of us are currently precluded from knowing enough about is about where the boundaries between market and non-market values start and end in the market under scrutiny. What is a market consideration for some may not be for others: how are we to find out what values are active in the market we are analysing, and to what degree?

We valuers have a little trick about that. When we are analysing the circumstances of sales evidence to see to what extent, if any, the evidence is applicable to the subject property, as far as possible we compare like with like: not just alike in geography, construction, access to services, use potential and other physical

attributes, but alike in other attributes as well, including highest and best legal use, and the business aspects of the property including the evaluation of risk, availability of finance and the hosts of variables that went into making the market value decisions made in comparable sales. Then we decide how they would apply in the case of the property we are valuing, the standard definition of which I repeat here to emphasise qualitative judgements required:

Market value is the *estimated* amount for which an asset or liability *should* exchange on the valuation date between a *willing* buyer and a *willing* seller in *an arm's length transaction*, after *proper marketing* and where the parties had each acted *knowledgeably*, *prudently* and *without compulsion* (IVSC, 2025, p. 9: emphases mine).

All of those terms I have italicised require value judgements by conscious beings, and our little trick as valuers is to collapse all those value judgement into a monetary value. That is, every market will capture some values, but not others: Value capture happens when:

> 1. An agent encounters a social environment that presents an external and explicit
>
> expression of some value — which is often simplified, standardized, and/or quantified.
>
> 2. The external expression of value comes to dominate the agent's practical reasoning in the relevant domain (Nguyen 2024).

In a metaphorical sense, value capture is comparable to what is termed the collapse of the wave function in quantum physics, and it turns out that some physicists have something relevant to value theory to say in that regard.

When it comes to we conscious beings valuing, the quantum physicists "Roger Penrose and Frederico Faggin agree on one important point when it comes to consciousness: it cannot be computed" (Kastrup et al 2024, at 0:40-0:45): is that also the case with our little trick? I am not sure about that, but am sure it relates to how we valuers should value AI.

Later, at 20:20 in Penrose adds that "quantum mechanics as it currently exists does not have a theory of the collapse of the wave function" and is, as such, incomplete. Well, neither does value theory explain how all the many and varied values at play in a market value decision collapse into a figure agreed to when a transaction is made, and as such is similarly incomplete.

It's not just quantum physicists and us that have difficulties here. Frustratingly for us when recognising there need for adequate definitions, this word "intelligence" has so many meanings it is

becoming meaningless, and "we still don't have a good grip on the fundamentals of cognition: how the senses work together to construct a world; how and where memories are stored long term, whether and how they remain stable, and how retrieval changes them; how decisions are made, and bodily action marshalled; and how valence is assessed" (Lyon 2021).

However, Daniel Kahneman (like Penrose a Nobel Laureate) with his colleague Amos Tversky greatly helped to mainstream behavioural economics, and broader and deeper understandings of the processes of that collapse are emerging from that discipline, including informing implementation science including because of its "rich and realistic models of human behavior … Behavioral economics offers a paradigm shift in how social scientists, including psychologists and economists, understand human behavior and decision-making" (Hodson et al, 2024). For now though, in practice when the parties to the transaction possess those qualities emphasised above have engaged them sufficiently in the transaction, as long as other relevant matters are also acceptable the transaction will be considered robust evidence of value for the subject property. Whatever the values that drove their decisions, they are in there somewhere, and some are replicable in the market under scrutiny.

In the years since Cannone and MacDonald's paper, much has been achieved relevance to value theory in general. It turns out that the following comment from a late twentieth century valuation textbook was far too modest:

> "Valuation is at the heart of all economic activity. Everything we do as individuals or as groups of individuals in business or as members of society is influenced by the concept of value. A sound working knowledge of the principles and procedures of valuation is essential in all sorts of decisions" (Ring and Boykin 1986, p.1).

However, as shown above, values aren't just concepts: they are hard-wired not just into us, but all of life itself. So, Ring and Boykin were right "on the money", so to speak about economic values, but general values go much further:

> "Valuing is not the same as 'thinking,' which is an all-body process predominantly located in the brain. There is no need to have a brain to be able to value: to be able to value requires only a living body ... being able to think is not necessary for being able to value. Even homo sapiens makes most decisions from the gut and not from the head … Valuing precedes thinking by billions of years" (Ecks, 2022, p. 31).

Scientists are tracking the neural pathways of human values. Unlike classical economics (with the exception of the merely

utilitarian values for some imaginary person), these are included in behavioural economics:

> "Behavioural economics combines elements of economics and psychology to understand how and why people behave the way they do in the real world. It differs from neoclassical economics, which assumes that most people have well-defined preferences and make well-informed, self-interested decisions based on those preferences ... Behavioural economics is grounded in empirical observations of human behavior, which have demonstrated that people do not always make what neoclassical economists consider the "rational" or "optimal" decision, even if they have the information and the tools available to do so" (Witynski, n.d.).

Even the axioms we use to provide a grounding for logical processes involve value judgements (the very word "axiom", like axiology itself, derives from an ancient Greek word for value or worth). As the London School of Economics' David Graeber put it, "it is value that brings universes into being" (Graeber 2013). The neuropsychologist Mark Solms adds that there is an intrinsic valence in any organism trying to continue to exist (what is good or bad for its existence), and the psychiatrist Iain McGilchrist adds that "I take value and purpose to be implied by the very nature of consciousness itself; constitutive of reality … I hold that our failure to understand this lies at the heart of our global predicament" (McGilchrist 2022),

I am here submitting that the value theory to be developed to address the competent management of AI machinery in our contexts should be informed by, even based upon, the above framing. Furthermore that, inclusive of the above, value theory's continuing development should discard and embrace by degrees or in kind according to empirical-behavioural research findings, including but not limited to those discovered via the processes involved in introducing AI into our fields of activity (the Plan, Do, Check and Act – PDCA – cycle).

1.2 A Historical Framing

At a similar time to Cannone and MacDonald's cry for development of value theory was being almost completely ignored, other valuers' cries were being ignored too, this time concerning malpractices that led directly to the subprime mortgage crisis in the USA, which in turn led to the Global Financial Crisis:

> "Crabtree began calling lenders to tell them what he had found; but to his shock, they did not seem to care. He finally reached one quality assurance officer at Fremont Investment & Loan, the nation's eighth-largest subprime

> lender. “Don’t put your nose where it doesn’t belong,” he was told.
>
> Crabtree took his story to state law enforcement officials and to the Federal Bureau of Investigation. ‘I was screaming at the top of my lungs,’ he said. He grew infuriated at the slow pace of enforcement and at prosecutors’ lack of response to a problem that was wreaking economic havoc in Bakersfield…
>
> Some real estate appraisers had also been expressing concerns for years. From 2000 to 2007, a coalition of appraisal organizations circulated and ultimately delivered to Washington officials a public petition; signed by 11,000 appraisers and including the name and address of each, it charged that lenders were pressuring appraisers to place artificially high prices on properties. According to the petition, lenders were ‘blacklisting honest appraisers’ and instead assigning business only to appraisers who would hit the desired price targets. ‘The powers that be cannot claim ignorance,’ the appraiser Dennis J. Black of Port Charlotte, Florida, testified to the Commission.” (Financial Crisis Inquiry Commission Report, pp 14-15 and p.18).

While inconvenient truths are so often stated but ignored by vested interests, when they affect our profession it is important, as our American colleagues did back then, that our concerns are stated and kept on the record even if the powers that be ignore them. I believe both that such a warning is particularly appropriate in this context, and that it will again be ignored by vested interests if it only comes from another valuer. But such is not the case: it also comes from AI experts.

2.0 AI: Artificial Yes, Intelligence, No.

As Weber mentioned above, “the depth of knowledge required, and the expectations of the marketplace for professional high-level proficiency, precludes one from becoming a master of each and all” (op. cit.). So, we listen to what the experts in relevant fields say. We valuers do that already. For example, if we suspect that a site we are valuing may be contaminated, we call in an expert and put the appropriate disclaimers and qualifiers in our reports. Let’s do the same with AI.

When it comes to intelligence, it is clear that “a computer, in the sense that we mean it which is a computational system, will not ever be intelligent” (Penrose in Kastrup et al 2024, 0:45-0:53). Furthermore, “[t]he Korean mathematician Daegene Song (2007 and 2015) claims to have established mathematically that artefacts such as computers will never become conscious ... Like states, sports teams, cars and other artefacts, people may identify

with them, but they will not identify back" (McDermott 2019, p. 171).

When it comes to AI experts themselves, as distinct from quantum physicists and other scientists who provided the grounding for their work, experts such as Martin Ciupa agree. Once, he even asked ChatGPT4o if it was conscious, and its answer was "no" (Ciupa 2025).

That is, the phrase "artificial intelligence" should not be interpreted as intelligence artificially made, but as an artifice providing similarities to intelligence, merely a simulacrum, like artificial flavourings like saccharin for sugar. Artificial intelligence isn't intelligent, and as consciousness is preconditional to intelligence, machines are not intelligent.

As such insofar as science and mathematics can tell us so far, any such claim that they are is "not even wrong", meaning it is an argument or explanation that may at first seem scientific but is based on unfalsifiable premises or is itself unfalsifiable and, thereby, unscientific. Furthermore, AI is subject to "garbage in, garbage out" (GIGO) principle, which refers to any problem with merely mechanical thinking, be it from genuine or artificial intelligence, computers or people, insofar as the latter confine themselves to merely linear thinking without questioning the premises of such thinking.

In all such contexts, answering a question that is based on false premises will automatically provide false answers, even if its internal logic is irrefutable. In the real world, garbage may have value, but to call a result of a computer valuation is not even garbage. A market valuation requires conscious, intelligent, prudent, knowledgeable organisms to meet the IVSC definition. Such a person may agree with a result spat out by a machine, and at that time that result becomes a valuation by that person. Before then, it is not a genuine valuation, and should not be called a valuation at all, but an assessment.

That established, we can cast aside all the scientistic woo-woo and get real with the potential applications of AI in the production of reliable valuations of unregistered land. I warn, though, that none of the following should be implemented without understanding the above, because to do so would be automatically falling into error.

3.0 Getting Real with AI, valuations of unregistered land, and Valuations

When we get down to the nitty-gritties of Automated Valuation Models (AVMs), Computer Assisted Mass Assessments (CAMAs) and the like, it is clear that they can already be sufficiently accurate for many purposes (Wang and Jing 2019, el

Jaouhari et al, 2024), particularly in domains where the property markets are transparent and accountable at scale (JLL 2024).

So what, then, is “not even garbage” about them?

Whether our values are hard wired genetically or soft-wired through education and experience, they steer us towards effective and skilful behaviour in addressing the challenges in our environments via stages: collecting data, converting some of it to information (information being differences that make a difference in the context) to knowledge to understanding to wisdom, the latter resulting in skilful means of addressing problems. But for many problems, near enough is good enough: we don’t need a Terence Tao to add six and seven. As behavioural economists put it, “fast and frugal” will get us by much of the time (Love et al 2023), but such approaches in some contexts can be quite dangerous: full of snares and pitfalls for the unwary.

Where Land Information Systems can already be used to create highly but not completely reliable assessments at scale, it is likely that AI can make them even more so. But what about elsewhere, where the need is greatest? All those countries, or areas within those countries, which are at the middle to lowest levels of JLL’s Global Real Estate Transparency Index, or the 100+ countries not included in it at all?

Initiatives such as the Land Governance Assessment Framework have identified many problems in such countries. It often appears forgotten, but in this context should never be, that it took many decades of unremitting effort for those countries in the top echelon of JLL’s transparency index to get there, and that they can only remain there by maintaining that effort.

Similarly, it should not be forgotten how they started. It included experts in the relevant disciplines, including but not limited to valuation, pooling their data, information, knowledge, understanding and wisdom and entering as much as that as is communicable via systems into openly available systems wherein they could constantly correct and inform entries into that system.

Love et al (2003) correctly emphasise the role that heuristics – rules of thumb – have played and must continue to play in addressing certain problems. However, the least dangerous and the potentially most useful heuristics in any field are those developed and used by people who are experts in that field. All experts, including valuers, are distinguishable from non-experts within their domains in the following ways:

> Experts notice features and meaningful patterns of information that are not noticed by novices; [they] have acquired a great deal of content knowledge that is organized in ways that reflect a deep understanding of

> their subject matter; [their] knowledge cannot be reduced to sets of isolated facts or propositions but, instead, reflects contexts of applicability; that is, the knowledge is "conditionalized" on a set of circumstances; [they] are able to flexibly retrieve important aspects of their knowledge with little attentional effort; though [they] know their disciplines thoroughly, this does not guarantee that they are able to teach others; and [they] have varying levels of flexibility in their approach to new situations; [they] are more likely than novices to first try to understand problems, rather than simply attempt to plug numbers into formulas, and [they] attempt to understand problems rather than to jump immediately to solution strategies (Branford et al 2000, pp. 31, 41 and 44).

Heuristics of experts can be very valuable: heuristics of the presumptuous uniformed can be rather less so, and in some cases not even garbage, because while garbage can be disposed of, as pointed out by behavioural economists, heuristics often cannot.

That means that the most important resource for the development of accurate valuations of unregistered land in less transparent markets are the local experts in those markets working hand in glove with experts in how to bring not only systems, but the skills organisations and institutions required to maintain them. Depending upon their availability or dependability, as either/or or both/and processes, it may also be desirable to introducer value juries into the decision-making. However, their roles in such problem spaces as ours require further and deeper research and understanding (Wanek et al 2003, Schaafsma et al 2018, Lally 1999, 2000)

In our case, we are looking at those experts including experts in AI. Amongst the types of AI available, by far the most interesting in our valuations of unregistered land context is causal AI, because it uses cause-and-effect relationships to make predictions and decisions. As the definition of market value requires that valuers go behind the data and investigate the circumstances of sales to see how well they suit the requirements of that definition, with the enfolding of findings of behavioural economics into their systems such cause-and-effect technologies may be both more transparent and accountable and more fit-for-purpose than normal AI.

What do causal AI systems need? Back in 2020, Sgaier et al (p. 50) warned that "[u]sing artificial intelligence to predict behavior can lead to devastating policy mistakes", and as such we have to be wary of its engagement in our context. They further recommended seven activities to facilitate the adoption and use of causal AI:

1. Make better use of data and improve their quality

2. Collect more comprehensive data.
3. Design scalable, high-performance open-source tools for applying causal AI algorithms
4. Mix artificial intelligence with human intelligence
5. Improve ways to evaluate algorithm performance
6. Demonstrate the value of causal AI in the development sector.
7. Build the awareness and knowledge of key stakeholders. (Sgaier et al 2000, p. 55).

So, with Sgaier et al's warning on page 50 and their recommendations on page 55 regarding data quality, already the Achilles heel of introducing valuations of unregistered land into much of the developing world, we are still subject to the GIGO principle, and the danger of lots of expertise and expense producing not even garbage.

4.0 Conclusion

"Philosophical clarity enable[s] technical breakthroughs … agency emerges not from larger models or more parameters (i.e., scaling laws) but from deliberately selected philosophical frameworks that facilitate autonomous reasoning and action ...Ultimately, AI agents must develop and deploy their own decisions across philosophical domains while maintaining alignment with human values" (Schrage and Kiron, 2025).

The way forward now is clear: in addressing AI, our value theory, principles and practices must instigate and keep vital a symbiotic relationship between the "fast and frugal" processes communicated by Love et al (2023) and other insights provided by behavioural economists, and collect and distribute their findings via causal AI-enhanced Land Information Systems. The latter point means that the internal aspects of valuation decisions (obviously as consistent with human rights; for example, depersonalised for privacy reasons and criteria communicated at a statistically emergent level rather than individual level) must also be included in communications technology, as is consistent with the market value definition, not merely the external realities.

I need only point to the many failed attempts to introduce GIS-based LIS in the developing world, and the causes of the subprime mortgage crisis, to stress that one without the other will fail, and even very dangerously fail, especially focussing on just social imaginaries and facts while ignoring the values that caused those social imaginaries and facts to manifest in our contexts in the first place. Those vessels of values, stories, are already recognised as essential to business valuations (Damodaran, 2017): if even that doyen of number-crunchers has come to realise that, perhaps it is now time for us to take that extra step, into the values themselves?

Permit me to conclude with a personal anecdote. When I first started my training as a valuer, now over 50 years ago, the first question I was taught to ask was “Why did the vendor decide to sell, and the purchaser to buy?” I have found that, once people get over their initial suspicions, they are generally eager to communicate as the deal meant so much to them, and much of value can be learnt from them. Then my lecturer in my Principles and Practice of Valuation II subject took a couple of other of his students and me to visit Professor James A. Graaskamp (Graaskamp, n.d.), who was in Adelaide at the time. When I mentioned that question to him, he replied with words to the effect that first and foremost valuation is a *behavioural* science.

That was true then, and remains so today, and to assert otherwise is not even garbage.

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