Data, Rules, Intelligence: Evaluating Kant's Relevance within Artificial and Synthetic Intelligence.

Word Count: 3532

ABSTRACT:

Immanuel Kant's *Critique of Pure Reason* (*CPR*) is an extremely influential text which investigates the limits of human knowledge. The Transcendental Deduction is central to this inquiry and sets forth the conditions of all possible experience, which involves placing data under rules to produce knowledge. Artificial and Synthetic agents (AI/SI) are two dominant models of intelligence within the current Digital Age, each exhibiting varied similarities and differences to Kant's Transcendental Deduction. The Transcendental Deduction will be established as an understanding of natural (human) intelligence and will act as a crucial reference point when discussing AI/SI models. I will argue for Kant's continued relevance within the fields of AI and SI, since all models fundamentally place data under rules to produce knowledge. Furthermore, I will contend that what is broadly labelled as AI is, in fact, a synthetic form of intelligence because it primarily depends on natural human knowledge. This distinction is especially important today, as the widespread perception of AI as purely artificial—carrying connotations of falseness and inauthenticity—obscures the vital role of human-derived knowledge in its functioning.

I. INTRODUCTION

In the 21st century there has been a rise of investment in AI research, which the media have termed the 'AI race'; specifically, between China and America.[1] Similar to the Space Race, this isn't only about creating the best possible AI system, as Martim Bustorff stated it 'has the potential to reshape economies, militaries, and entire industries, making dominance in AI just as critical as the moon landing was decades ago'[2]. The race between two global superpowers has inevitably increased the regular usage of AI in our day to day lives; yet how does it compare to natural intelligence?

In unpacking the 18th century Kantian model of intelligence- The Transcendental Deduction- its fundamental concepts will be compared and contrasted with 21st century intelligence innovations. Kant's applicability and validity, or lack thereof, within modern intelligence will be a central argument in this paper, before arriving at the conclusion that AI presents a dangerous façade of being purely artificial. By drawing from current AI research, it will be argued that Kant would understand AI as a *synthetic* model of intelligence. Both natural and 'artificial' (synthetic) intelligence place data under rules to gain knowledge, which is an inherently Kantian concept, thus displacing critiques of Kantian intelligence being 'outdated'.

---

[1]The Diplomat, "The China-US AI Race Enters a New (and More Dangerous) Phase," *The Diplomat*, May 16, 2025, https://tribunecontentagency.com/article/the-china-us-ai-race-enters-a-new-and-more-dangerous-phase/.

TrendForce News, "AI Talent Race Heats Up in China as Xiaomi, ByteDance, and Alibaba Compete for Experts," *TrendForce*, February 21, 2025, https://www.trendforce.com/news/2025/02/21/new-ai-talent-race-heats-up-in-china-as-xiaomi-bytedance-and-alibaba-compete-for-experts/.

Alden Abbott, "U.S.-China AI Competition in the Spotlight," *Truth on the Market*, August 6, 2025, https://truthonthemarket.com/2025/08/06/us-china-ai-competition-in-the-spotlight/.

[2] Martim Bustorff, "The New Space Race: How AI Is the 21st Century's Moon Landing- and Why Taiwan Holds the Key", *Medium,* January 29, 2025, https://medium.com/@martimbustorff/the-new-space-race-how-ai-is-the-21st-centurys-moon-landing-a25beaf262ba.

II. UNDERSTANDING KANT'S TRANSCENDENTAL DEDUCTION

The Transcendental Deduction is a vital tool within Kant's investigation into the limits of human knowledge. The complex but revolutionary tool attempts to show that all human thought and knowledge depend on the categories of the understanding. I will use the Transcendental Deduction as a framework for natural (non-computational) intelligence, and it will be a useful stepping stone to AI and SI models. The eventual aim of the Transcendental Deduction, as Robert Wardy notes 'is to prove that, since every experience involves judgement, every possible experience must involve use of the categories'.[3]

The table of categories (fig1) sets forth the *a priori* [4] categories necessary for any possible cognition[5] of objects. Kant's Transcendental Deduction attempts to conclude how one can form a judgement of something without having engaged with it through the senses. Each category (Quantity, Quality, Modality, Relation), and subsequent subcategories (Unity, Plurality Totality etc.) can be applied to any potential object of cognition. These categories allow for the formation of coherent

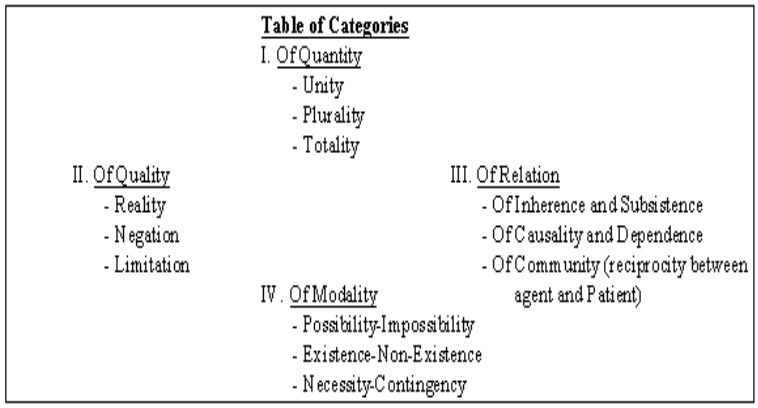


Figure 1. *Table of Categories*, in *Internet Encyclopaedia of Philosophy*, accessed February 28, 2025, [Immanuel Kant: Logic | Internet Encyclopaedia of Philosophy].

[3] Robert Wardy, "Categories in Kant." In *Routledge Encyclopaedia of Philosophy*, ed. E. Craig (Taylor and Francis, 1998), https://doi.org/10.4324/9780415249126-N005-1.

[4] 'A way of gaining knowledge without appealing to any particular experience(s).' Aude Sapere, "Technical Terms of Kantian Philosophy," *Kant's Philosophy: Immanuel Kant Blog*, accessed August 11, 2025, https://philosophyofimmanuelkant.wordpress.com/technical-terms-of-kantian-philosophy/.

[5] 'any conscious representation that represents an object even if the object cannot be given in experience (i.e. does not exist in space and time)'. Tobias Schlicht, "1: Minds, Brains, and Deep Learning: The Development of Cognitive Science Through the Lens of Kant's Approach to Cognition," in *Kant and Artificial Intelligence* (Berlin: De Gruyter, 2022), 16, https://doi.org/10.1515/9783110706611-001.

judgements instead of jumbled representations. Maurizio Ferraris summarised the Transcendental Deduction in terms of substance and cause:

> 'at the beginning of the cycle, here is the 'I', and, at the end, we find Substance and Cause; in the middle, there is a stack of logical and psychological instruments…by means of the transcendental deduction and the schematism, **the categories are transformed into the principles that regulate experience'**'[6].

The logical and psychological instruments refer to the exhaustive conditions within the table of categories (see fig.1). Schemas are the 'rules of experience' and allow for capacity to imagine, i.e. 'through which concepts and intuitions are combined according to a rule (schema).'[7] For Kant, schemas are essential as they allow for the organisation and interpretation of sensory data in a useful manner. After considering the table of categories, schemas ensure a coherent sensory experience; without schemas one could not form intelligible knowledge about the world.

Ferraris likens the Transcendental Deduction to an outdated and slow film camera (fig.2); an analogy which on the surface seems funny and somewhat logical. However upon second glance, Kant's intelligence is undoubtedly relevant. Ferraris boldly considers the Transcendental Deduction as:

> '…an **amazingly sophisticated** device with loads of commands and **complex** functions, which is very (indeed, too) **hard to use**. But our actual experience, being **quick and secure and not involving conscious calculations**, resembles the most recent foolproof **electronic cameras** (fig.3)'.[8]

[6] Maurizio Ferraris, *Goodbye Kant! What Still Stands of the Critique of Pure Reason*, trans. Richard Brian Davies (Albany: State University of New York Press, 2013), 75.

[7] Sapere, "Schematism."

[8] Ferraris, *Goodbye Kant!*, 75.



Figure 2. *LEICA IIIa camera*, in *LEICA IIIa* (1935–1938), accessed February 28, 2025, [LEICA IIIa (1935-1938)]



Figure 3. Canon EOS 2000D Camera, in *Canon UK online store*. Accessed February 28, 2025. [https://www.canon.co.uk/store/canon-eos-2000d-camera-ef-s-18-55mm-is-ii-lens/2728C006/].

In his analogy, Ferraris rightly acknowledges that actual experience is quick and secure and does not involve tedious and complex calculations. However, the very nature of Kant's Transcendental Deduction *is* a tedious one. It seeks the exact rules of experience. This isn't something which can be concluded with the pressing of a button, as Ferraris implies by noting the appropriate analogy of experience as a modern, fast digital camera.

Ferraris said that Kant 'assumes the conditions of possible *knowledge* of the objects of experience are the same as the conditions of possible *experience* of them'[9]. Ferraris insists that Kant equates potential knowledge with actual experience, and 'commits himself to a thesis that **holds good only for a theory of science and not for a theory of experience**.'[10] However, Ferraris fails to acknowledge that the categories are inherent in our cognitive faculties and do not derive from experience. His critique holds little weight since he fails to provide an alternative model and merely mocks Kantian intelligence as outdated; his criticism isn't proactive but simply unproductive. Kant's model is detailed and accurate. The Transcendental Deduction, although methodological and mimics that of a theory of science, involves a position where the categories are the necessary conditions for synthesising sensory data into a coherent experience. Ferraris' claim of the rigid nature of the

[9] Ferraris, *Goodbye Kant*!, 80.

[10] Ferraris, *Goodbye Kant!*, 80.

deduction is a valid one, as it is tedious and challenging to understand, yet he does not consider the fact that if one cannot cognise, one cannot have meaningful, coherent experiences. Ferraris' critique is a surface level one which fails to provide any constructive feedback.

To revisit the analogy, with a modern digital camera, you simply need a battery and the ability to press the button; instead of the rigorous film development process. This is the suggested implication of Ferraris' analogy. However what Ferraris ignores about his own analogy is that Kant set the base rules for our understanding of experience across a range of academic disciplines; without Kant our understanding of experience may be entirely different. Just like Kant, if the film camera were not created, there would be no such thing as the digital camera. Ferraris ignores the lasting legacy of the Transcendental Deduction, specifically the persistence of Kant's theory that one must place data (sensory experience) under rules (the categories) to gain knowledge (form a coherent and meaningful experience). The legacy and irrefutable relevance of Kant's Transcendental Deduction is integral to the following discussions of AI and SI.

III. ARTIFICIAL INTELLIGENCE (AI)

AI, an extremely dominant intelligence model, can be defined simply as, 'the application of computer systems able to perform tasks or produce output normally requiring human intelligence'[11]. All AI definitions possess the central thesis that it only *simulates* human thought and thus produces *simulated* intelligence. AI models do not have agency; it cannot form judgements, through cognition, since it simply follows instructions. Although the Transcendental Deduction is complex and methodological, it can be applied to any object of experience. It breaks down the rules of experience and allows for the formation of knowledge and judgements. AI does not have this sense of 'initiative' as it does not experience the world, it is an object and creation of human knowledge.

[11] *Oxford English Dictionary*, s.v. "AI," accessed February 3, 2025, https://doi.org/10.1093/OED/4504093236.

AI relies on correlational patterns; this means that they identify patterns and relationships in data based on statistical correlations. Kantian Intelligence relies on *causal* patterns. This is a key distinction between natural and artificial intelligence because it highlights AI's lack of autonomy. In Kantian terms, AI is a simulation of human intelligence as it does not *experience* a world outside itself. Many fear AI because of the threat that it may gain agency. William Eggington dismisses this worry by considering AI in Kantian terms:

> 'A being whose cognition consisted entirely of a set of instructions could, **by definition, make no distinction between the instructions and an experience of the world outside those instructions.** For such a being, **its knowledge would always equate to its world**, with no difference between the two…**perceiving the present requires a modicum of a self that is not utterly immersed in that present, without which there would be nothing to synthesize disparate moments into a coherent experience**..'[12]

As Eggington notes, Kantian intelligence involves experience, which itself begins with cognition. Kant stated that 'all our cognition commences with experience, yet it does not on that account all arise from experience.'[13] Thus an AI model cannot experience a world outside of its data input because it is incapable of cognition and is 'utterly immersed in the present.' Eggington's use of synthesis is interesting since Kant discusses it in depth in his *CPR* and it holds relevance in all three models, as will be later discussed. Eggington rightly outlines that AI models cannot make distinctions between instructions given and an experience of the world outside those instructions. Human cognition cannot be reduced to this because we are conscious, dynamic beings, with autonomy.

As stated, AI relies on correlational patterns, not causal ones. However, a new subfield of AI, Machine Learning (ML), is striving to overcome this. Zhi-Hua Zhou defines ML as:

---

[12] William Egginton, "Why Kant Wouldn't Fear AI," *Time*, 2023, accessed February 4, 2025, https://time.com/6261084/kant-ai-ethics-chatgpt/.

[13] Immanuel Kant, *Prolegomena to Any Future Metaphysics That Will Be Able to Come Forward as Science: With Selections from the Critique of Pure Reason*, rev. ed., ed. Gary C. Hatfield (Cambridge: Cambridge University Press, 2004), 136 [B1].

> ‘the technique that improves system performance **by learning from experience via computational methods**. In computer systems, experience exists in the form of data, and the main task of machine learning is to develop *learning algorithms* that build *models* from data.’[14]

Experience here refers to previous inputs into the intelligence, to which ML builds on to predict future ones; giving rise to algorithms. Zhou continues:

> ‘…by feeding the learning algorithm with **experience data**, we can obtain a model that can make predictions. If we consider computer science as the subject of algorithms, then machine learning is the subject of *learning algorithms.* ’[15]

ML facilitates data automation by using algorithms to analyse vast amounts of data and identify patterns; something especially prevalent on social media. It’s how they keep their platforms going; if a user likes content relating to cooking, the platform collects this data and provides the user with more cooking content, in turn consistently engaging users and the platform continues to profit.

Yet how does ML compare to Kantian intelligence? One argument would be that it is all Kantian intelligence because a human being has created this model, according to the rules of cognition and understanding. For example, generative AI models, as defined by Microsoft, ‘analyse large amounts of data and generates new content, including text and images that mirrors human expression.’ [16] Generative AI models, such as Chat GPT, can create articles, stories, images, conversations, essays, and anything thinkable, based on one small prompt. They exceed ML as they simply respond to one prompt, as opposed to the accumulation of data over a period of time. For example, when asked, ‘what is Chat GPT and how does it work’ it responds with (fig4):

---

[14] Zhi-Hua Zhou, “Introduction,” in *Machine Learning* (Singapore: Springer Singapore, 2021), 1, https://doi.org/10.1007/978-981-15-1967-3_1.

[15] Zhou, “Introduction,” 2.

[16] Microsoft, “How Does Generative AI Work,” Microsoft, 2025, accessed February 4, 2025, https://www.microsoft.com/en-us/ai/how-generative-ai-works, para. 1 of 27.

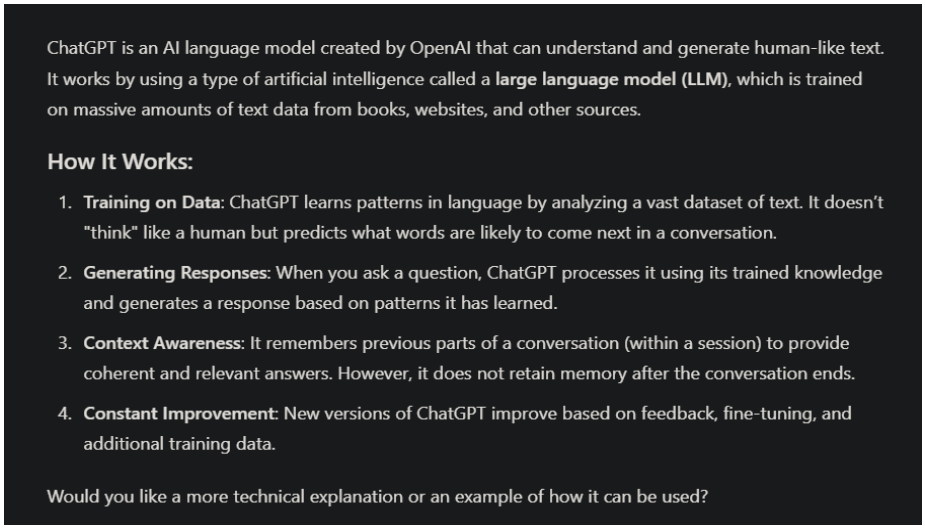


Figure 4. ChatGPT response, in *What is ChatGPT*, accessed February 28, 2025, [What is Chat GPT]

To provide an analogy, generative AI models are like walking into a library, which contains textbooks on *everything*, and asking the librarian a question pertaining to your topic- to which the librarian would provide you not only with indicative reading, but an in-depth summary and explanation of your chosen topic. This is unrealistic, because human intelligence does not have the capability to possess and regurgitate such knowledge within seconds; so we created a model to do it for us. In the above response, Chat GPT is drawing from human knowledge available online. Therefore it is worth questioning if AI can be called a purely artificial model since it fundamentally draws from human intelligence to produce its knowledge.

IV. REDIFINING AI: SYNTHETIC INTELLIGENCE (SI)

To compare AI to Kantian intelligence, both place data (human knowledge found online) under rules (coding and correlational patterns) to produce judgements. AI thinks like a Kantian, insofar as it follows this central instruction of placing data under rules, therefore Ferraris' critique of the Transcendental Deduction as outdated does not hold. Kant is not merely dated but the contrary- he is ahead of the curve when it comes to AI. However, Kant would understand AI, not as the definition outlined previously, which alludes to a purely artificial model, but as synthetic intelligence. John Haugeland discusses this very paradox:

> 'Perhaps Artificial Intelligence should be called "Synthetic Intelligence" to accord better with commercial parlance. Thus, artificial diamonds are fake imitations. Whereas synthetic

> diamonds are genuine diamonds, **only manufactured instead of dug up** (compared also artificial maple flavoring versus, say, insulin). Despite the name, **AI clearly aims at genuine intelligence, not a fake imitation.'**[17]

What is known as AI is not inherently *artificial,* but *synthetic* because AI involves the 'synthesis' of natural intelligence with computer intelligence, which itself is a product of natural intelligence. Any definition of synthesis, in any context, states a 'fusion' of two separate components, to create an augmented whole. Haugeland is correct in that AI does aim for genuine intelligence, with the Chat GPT response as a prime example since the response was factually true. AI not only attempts to mimic human conversation and intelligence but attempts to *overcome* human intelligence and become the 'best' model; with the irony being that it relies on human intelligence.

Kantian and artificial intelligence, (which will henceforth be considered as in fact synthetic) possess the same fundamental characteristics of placing data under rules to 'produce' knowledge. Our definition of AI which states the *application* of computer systems to produce content typically requiring *human* intelligence, seems sinister compared to SI. The key difference is that SI incorporates human intelligence and computer intelligence to produce something new, as opposed to AI which, as Haugeland notes, indicates a *fake* intelligence (i.e., non-human) when it actually utilizes human and computer intelligence to produce a new amplified whole.

The diamond analogy aligns with all the three intelligence models, especially Haugeland's use of 'manufactured' when referring to SI. Kant's definition of synthesis too includes the concept of manufacturing. Kant emphasizes the role of synthesis through his definition of imagination, which is 'the faculty for synthesizing intuitions without concepts to form objects which are ready to be judged.'[18] When considering synthesis as the vehicle which facilitates imagination, Kant's definition of synthesis must first be attended to, which he defines in the *CPR* as:

---

[17] John Haugeland, *Artificial Intelligence: The Very Idea* (Cambridge, MA: MIT Press, 1985), 255–56, accessed March 27, 2025, https://archive.org/details/artificialintell0000haug.

[18] Sapere, 'Imagination."

> **'The act of adding diverse representations** to one another, and of comprehending their manifoldness [19] in a cognition. Synthesis is nonetheless **that which actually assembles the elements for cognitions and unifies them into a specific content**; it is therefore the first thing to which we must attend if we want to judge the **first origin of cognition.'**[20]

Synthesis is fundamental in the process of cognition because without it one could not imagine something they are yet to experience. Without the capacity to imagine, cognition is similar to that of AI and SI in that one would only receive *a posteriori* data and could not comprehend anything beyond experience. The notion of unification is key in Kant's definition, as similar to Haugeland's notion of manufacturing, it denotes that two elements must be fused together to produce a new better product- which is precisely what SI does, as seen in the diamond analogy. Therefore AI should be redefined as an SI model because it is not purely artificial since it involves the fusion of computer and human intelligence- not purely computer intelligence. Kant's concept of synthesis *is synthesis*, since it involves the fusion of fundamental elements to create a better, more coherent product. Notably, Kant states that synthesis must first be addressed in order to understand cognition, emphasising its fundamentality within understanding and knowledge. Kant's definition of synthesis allows for an understanding of *how* cognition works as a result of adding diverse representations to one another to form specific content.

V. CAN SI/AI IMAGINE?

Kant and Haugeland's definitions of synthesis pose a key question; can SI models actually imagine? With this question, their capacity for synthesis must also be considered. The concept of imagination and SI/AI models is contradictory since these models can only *simulate* imagination as they are not cognitive beings with the capacity to form 'objects which are ready to be judged' through intuition. As

[19] The manifold is the unorganized flux presented to the senses, but not experienced, since experience results from the mind structuring the manifold by means of concepts. The nature of the unstructured manifold is unknowable (transcendental). Simon Blackburn, "Manifold," in *The Oxford Dictionary of Philosophy* (Oxford: Oxford University Press, 2016).

[20] Kant, *Prolegomena,* 165 [B1].

Michael Stuart advises, 'AI can do things that look imaginative, such as game playing algorithms like DreamerV3' however this is a simulation of imagination.[21] AI/SI can construct models that *look* imaginative but authentic imagination requires agency and interaction with an external world, other than the data input.

An AI/SI model which simulates the concept of imagination are image generators, for example Google's 'Image FX;' which operates as a text-to-image model. Similar to generative AI, with one simple prompt ('21st Century Kant and Technology') a series of images are generated (fig.5). Does this model of SI conform to Kant's definition of imagination? Rachel Gordon explains the logistics of image generation in terms of diffusion, which all image generative AI models use. Gordon explains that diffusion models:

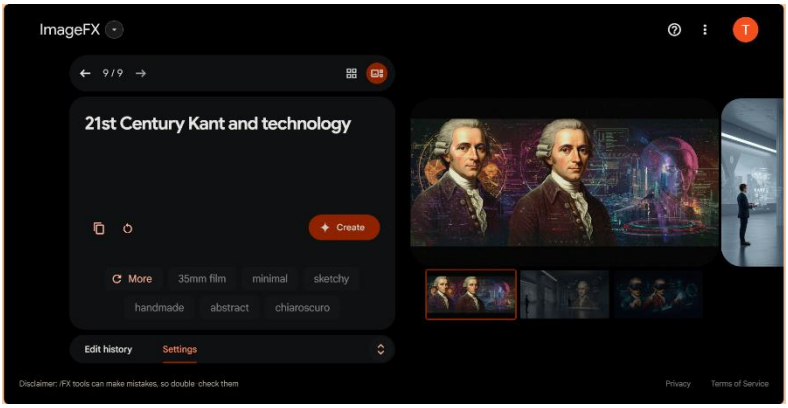


Figure 5. Google Image FX response, in *ImageFX – Labs, Google/FX*, accessed February 28, 2025, [ImageFX - labs.google/fx].

> 'turn words into astounding images; imagine all of the images on google and their associated patterns. **This is the diet these models are fed on**. They're trained on all of these images and their captions **to generate *similar* images to the billions seen online.'**[22]

Thanks to the diffusion model, Image FX has 'learned' concepts through correlation. For example it possesses a concept of Kant, technology, and the 21st century and correlates images from the internet to form a new whole. In terms of whether this model is *synthetic* or *artificial*, I would suggest that it is

[21] Michael T. Stuart, "Can AI Imagine," *The Junkyard*, 2024, accessed March 15, 2025, https://thejunkyard.com/can-ai-imagine, para. 8 of 17.

[22] Rachel Gordon, "3 Questions: How AI Image Generators Work," *MIT CSAIL*, 2022, accessed August 11, 2025, https://www.csail.mit.edu/news/3-questions-how-ai-image-generators-work , paras. 4 and 5 of 25.

synthetic because the images being learned have been captured/ created by a human, and the AI image generated is an abstraction and combination of all three concepts.

Without this initial man-made content, there is no raw data for the model to interpret; as is the case for *all* models, which are named AI but actually conform to the definitions of synthesis. Without the initial research and knowledge of humans, these models would not exist, thus I agree with Haugeland's argument that AI should be redefined as SI. What is called *artificial* is not purely artificial because it involves the fusion of human intelligence and computer intelligence. Since the two fuse together, SI/AI conforms to the Kantian definition of synthesis, yet the technological component cannot form intuitions since these arise from interactions through the senses. [23] The notion of combining two elements to create a better product is inherent in SI/AI, yet these models do not pertain to the Kantian definition which places emphasis on intuitions and judgements, which cannot yet authentically be achieved through computational intelligence alone. Thus SI models cannot 'imagine' in any capacity, but they do synthesise, just not in a Kantian manner, since they fundamentally fuse two components to create a new amplified whole.

VI. CONCLUSION

The collective understanding of AI as purely artificial is untrue and misleading and obscures the vital role of human-derived knowledge in its functioning. It has arisen due to the general understanding of artificial as synonymous with 'fake' or 'non-human.' The concept of artificial refers to the model's aim of simulating human intelligence, so is somewhat correct. However, by investigating AI's synthetic nature, through an assessment of how a handful of 'AI' models work and various definitions of artificial and synthetic, it's clear that AI is not purely artificial, since it relies on human intelligence and experience.

[23] 'the passive species of representation, by means of which our sensibility enables to have sensations. intuitions allow us to perceive particular relations between representations, thereby limiting empirical knowledge to the sensible realm.' Sapere, 'Synthesis."

The Kantian model of intelligence provides an interesting start point for understanding human intelligence, and the subsequent creation of other intelligence models by man. Although Ferraris criticised Kant's model as incredibly difficult and complex, Kant's relevance cannot be disputed since all SI/ AI models fundamentally place data under rules to produce knowledge.

Data, rules, and knowledge are integral to all three models assessed, and by comparing and contrasting Kantian intelligence with SI/AI models it is clear that Kant's model persists in validity, applicability, and relevance; despite the unpredictable and exponential boom of technology since the *CPR* was published. This essential part of Kant's investigation should not be overlooked as its relevance is likely to persist as SI models continue to develop. Kant's aim was to investigate the *limits* of knowledge; perhaps SI/ AI models are an extreme case study, which would be unfathomable to Kant. Yet, it is evident that they too have limits- as of now, they are limited in their reliance on *human* intelligence since humans created their raw data and the models themselves. A concept which seems dystopian, yet not out of the question, is the self-sufficiency of AI; will it ever be able to form knowledge without relying on human intelligence?

STANCE SUBMISION ENDS.