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Intelligent, artificially

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Editorial

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It seems inevitable that artificial intelligence will become the AI of the future, and that will include pervading genomic selection and hence the territory of the traditional 'AI man', or more precisely, inseminator. The potential application of AI in the dairy sector is expertly reviewed in this issue by Einar Vargas-Bello-Pérez and his colleagues, (Espinoza-Sandoval *et al*., 2024) and submissions relating to both production and processing applications appear with regularity now. I would be failing in my duties as Editor if I continued to live in comparative ignorance of what AI is, and since the opportunity is there I asked AI to tell me all about itself: *Artificial Intelligence (AI) is a branch of computer science focused on creating systems or machines capable of performing tasks that typically require human intelligence. These tasks include learning, reasoning, problem-solving, perception, language understanding, and decision-making* (ChatGPT, 2024). So far so good and, being an Editor, I decided to focus on the language understanding aspect. ChatGPT defaults to using the Oxford comma, as one can see in the quotation (the commas continue to include a final comma preceding 'and'). There is no real modern consensus regarding this grammatical feature, although in my experience it is a rather new invention. Consider these examples, taken from the internet: *We invited our grouchy neighbours, Jan and Ted. We invited our grouchy neighbours, Jan, and Ted.* In the first example it is clear that two people are invited, they are the writer's neighbours and they are grouchy. In the second, with the Oxford comma, we do not know for sure how many people are invited but we can surmise that Jan and Ted are probably neither grouchy nor neighbours (in surmising we are using our intelligence, remember). I would contend that the first statement is the more 'intelligent', but would I be right? Another internet example, complete with its interpretation: *With this award, I would like to thank my parents, Oprah Winfrey, and God. In this sentence, the Oxford comma makes it clear that the speaker is thanking three entities separately: their parents, Oprah Winfrey, and God. Without the Oxford comma, it could be interpreted as thanking two entities: their parents (who are Oprah Winfrey and God).* I cannot help feeling that this justification for the Oxford comma, whilst perhaps technically accurate, regards the reader as unintelligent (or did Oprah actually conceive to God?!) In a comparative biology sense, language is probably the most easily identifiable criterion of intelligence and, let's face it, intelligence is not a particularly easy attribute to define with precision (autism being a prime example of where it becomes difficult). Grammatically, 'intelligence' can refer *either* to an individual's ability to reason, perform complex tasks, compute, analyse, predict, etc etc (collectively the cognitive skills) *or* it can simply refer to the information that the individual can call upon to help do these things (as in the intelligence services that protect societies). Where the latter sense of the word is concerned, simply having information does not in itself make an individual intelligent. And so it should be with systems or machines that truly comprise AI. So, back to the Oxford comma. If you are using your intelligence you may have guessed that I don't particularly like it, and tend to avoid using it. Can ChatGPT learn to avoid the Oxford comma when talking to me? *Absolutely, I can adjust my style to match your preference.* Could it have guessed my preference? *It's possible, but without specific information about your preferences, I default to using the Oxford comma since it's widely accepted. However, now that you've mentioned it, I'll remember your preference for future conversations.* Well actually, in effect I mentioned it in my previous question, but without specifically stating my preference. So can ChatGPT genuinely learn (for itself, by deduction or reasoning) or does it simply follow rules that can be redefined by users? Whilst in Denmark my wife and I baby sat for friends whose (roughly) three year old daughter was not only fluent in both English and Danish but also understood the nuances of intelligent and interesting conversation (which words to accent and how, for example) and also had formulated her own set of rules regarding the use of language, such that we were severely ticked off when suggesting a Danish language bedtime story (*Danish is for kindergarten!*) She was undoubtedly intelligent and very much at ease with us in her home surroundings, yet on an occasion when we chanced upon her in town with her father we were completely shunned. I could speculate as to why (defence mechanism, play acting, privacy induced anger or maybe simply tiredness) but the point is some aspect of her social and emotional intelligence led her to that particular response. ChatGPT, do you get angry? *I don't experience emotions like humans do, so I don't get angry.* Most dog owners will probably appreciate that emotional intelligence is not confined to our own species! If language is the most useful benchmark of intelligence, predictive capability may well be the second. My mother taught biology to

secondary school pupils, and I recall her absolute despair when the school headmaster declared at a school assembly that the thing that separates man from beast is our ability to recall. Well yes, we can, but for many other species individual survival requires that same intelligence skill in depth, whereas the success of Temple Grandin's improvements to slaughterhouse design would suggest that stress levels are much more related to the environment than to any awareness of the impending outcome (Dr Grandin is both autistic and highly intelligent, incidentally). ChatGPT, what will I do next? *To provide the best guidance, it would help if you could share more details about your situation or what you're currently working on.* To be fair, it would have been a very tall order for any system or individual to answer that question, as I might not even have decided myself. *I don't know* would probably have been an intelligent response, but to come to the conclusion that I am seeking guidance would suggest that the rules being followed are built around simply finding and conveying known information. I started this Editorial by trying to understand what AI is. The definition provided by ChatGPT does not really resonate with me, as I can see only limited evidence of *learning, reasoning, problem-solving, perception, language understanding, and decision-making* in the limited number of examples I have pursued. Is Artificial Intelligence also intelligent? Not yet, in my view. Indeed, I am thrown back on my (biased) preconception, namely that AI systems and machines are extremely capable of analysing what they already know. I suspect that this impression is a very common one, and maybe only the very most intelligent of us can see beyond it! Interestingly, recent research suggests that only a very small number of people (around 2% of the population) actually use it (Fletcher and Nielsen, 2024). Nevertheless, I still believe that AI will not go away, so I shall give the final word to Chat GPT: *In the modern landscape of dairy farming, the integration of Artificial Intelligence (AI) has emerged as both a beacon of innovation and a cornerstone of efficiency, revolutionizing traditional practices and reshaping the future of the industry.* When challenged, it came up with five examples to justify that statement, and if you wish to know them, please use your intelligence and go speak to it!

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