2 of 3. Why are Humans Important in AI?

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AI (Artificial Intelligence) can beat us at Go and Chess. AI let an automated car kill a cyclist. AI can analyse X-ray screens very well. ChatGPT can write essays for students, but they are bland and full of errors (″hallucinations″).

In my first Blog (2nd October 2023 [FOOTNOTE 1]) I listed 6 questions people are typically asking about AI, Q1 being a philosophical question ″Could computers ever become like humans?″ We saw how a Biblical perspective, which celebrates the diversity of meaning in Creation - multiple aspects - enables us to clarify that question by comparing human and AI in each aspect. In the quantitative to physical aspects computers computers are like humans, but when considering what the AI does in other aspects (biotic and psychical aspects, governing plants and animals, and the ′human′ aspects, analytical, formative, lingual, social, economic, aesthetic, juridical, ethical and that of faith) we may answer ″Yes″ and ″No″. ″Yes″ if we take human users, designers, etc. into account; ″No″ if we do not. This multi-aspectual approach makes debate on whether AI can be like humans more nuanced and fruitful.

The other five questions were:

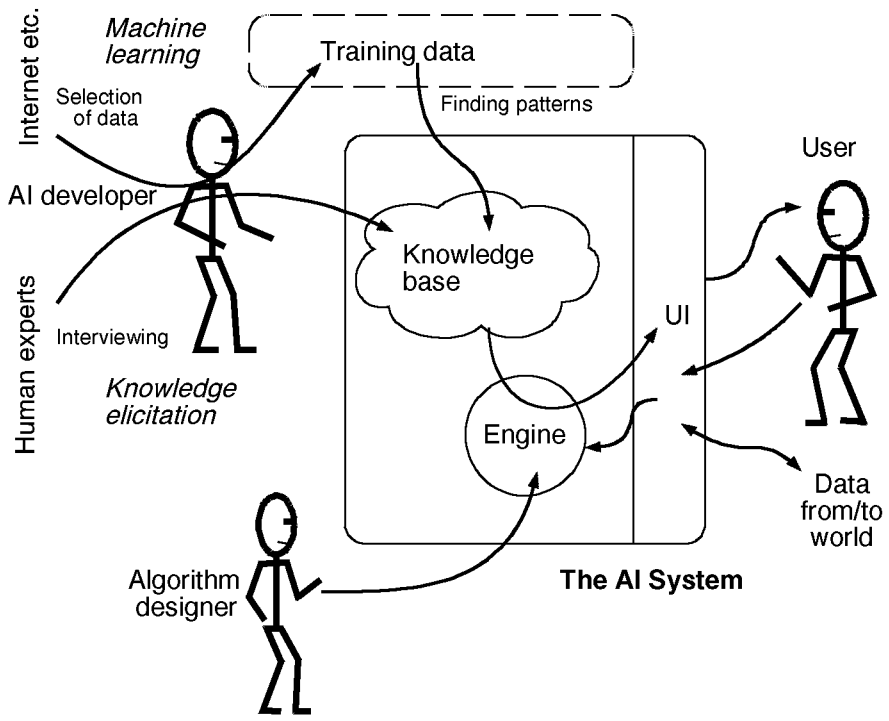
Q2, ″Will AI take over the world, making humans extinct?″
Q3, ″Will AI write essays for students so that they can cheat?″
Q4, ″Will automatic cars will kill cyclists who are pushing their cycles?″ (one did)
Q5, ″Surely AI is better at detecting cancers in x-rays / finding new chemicals / etc.″
Q6, ″Will AI recognise my face and put me at risk?″

To answer Q3 we must understand what makes AI capable in any given task, Q4, why AI goes wrong, and Q5, what it is that enables AI to work better in some applications rather than others. Q6 sounds like other questions but I use it to highlight one further issue: how we use AI. Only then can we address Q2 - along with Elon Musk′s claim that AI will do all our jobs.

We will address them in Blog 3, after understanding how AI technology works and the importance of humans.

--- How AI Works

The following figure shows roughly how AI works. The AI system is a software engine operating with a knowledge base, interacting with users via a user interface (UI) and sometimes data from the world via sensors or databases [FOOTNOTE 2].



The knowledge base encapsulates knowledge about how it should operate in its intended application, based on various technologies, like inference nets, sets of logical statements, sets of associations, or so-called neural networks. The engine is designed and written to process the encapsulated knowledge according to the technology employed so as to respond to users (or the world).

For example, at the core of ChatGPT is a huge matrix of probabilistic associations between phrases and words found in billions of statements taken off the Internet (with a lot more around this, such as images). Its engine uses this both to understand user questions or instructions and to generate replies or even essays [FOOTNOTE 3].

--- Two Kinds of AI

There are two kinds of AI, two ways in which the knowledge base can be constructed, in which the AI developer operates in a different way: human knowledge elicitation and machine learning.

In my early work as AI developer in the 1980s, we would manually build the knowledge base by interviewing human experts and expressing the elicited knowledge in an appropriate computer language. Knowledge engineering, as it was called, was a labour-intensive process, in which good knowledge engineers would winkle out tacit knowledge and rare exceptions and incorporate them into the knowledge base.

Today's machine learning AI (MLAI) bypasses the human processes of eliciting and expressing knowledge, by detecting patterns in masses of training data supplied to it by AI developers, such as from Reddit in the case of ChatGPT. [FOOTNOTE 4] I like the explanation given by Paul McCartney of how they used MLAI to extact John Lennon's voice from a poor quality recording; they told the AI system,

> "That's voice. That's guitar. In this recording, lose the guitar."

--- Why Humans - and Faith - Are Important

How well AI works depends on the quality of knowledge in its knowledge and, of course, on the engine processing this correctly. Since human beings design both engine (algorithm designer) and knowledge base (AI developer), and also use the AI system, even if indirectly, AI cannot be properly understood without taking human intention and interpretation into account.

The quality of early AI depended on sensitive elicitation and close relationships of trust with experts. Sadly, because AI became fashionable, many became knowledge engineers who would be less careful, so that many AI systems did not work well. Quality of MLAI depends on careful selection of training data and of parameters by which to learn patterns.

In both kinds, the quality of the knowledge base is a human responsibility. This is where faith can make a difference. Being committed to Christ led me to be honest and careful, taking trouble to seek tacit and exceptional knowledge, rather than merely doing a job to a deadline. I tried to make the way the AI worked serve the users and dignify them - and urged potential users to use it with responsibility. The equivalent in MLAI today would be care in selecting data and pattern parameters.

Of course many who are not Christians also take this care. Where I think faith might matter more lies at a deeoer level. Presuppositions and worldviews affect the way such questions as are listed above are debated, and these have a religious quality [FOOTNOTE 5]. Often each question is addressed separately and from a utilitarian or purely academic viewpoint, but my Christian faith urges me towards an overall, integrative viewpoint. In my third Blog, I will show how by addressing the five questions with the framework of aspects used in Blog 1.

--- FOOTNOTES

1. Link to Blog 1.

2. [About UI] In automated AI the UI might be only a start/stop button, a few controls and data from sensors, but in most AI, like ChatGPT, there is more ‘dialogue’ between users and AI systems.

3. Links to how ChatGPT works.

4. [About ML AI] MLAI knowledge bases are usually based on neural net technology or associations.

5. [Footnote re effect of presuppositions on debate] Most philosophical and scientific thinking, especially in AI, takes what Dooyeweerd called an immanence-standpoint, which lies at the root of Greek and Humanistic thinking. This presupposes that it is valid to try to understand the essence of AI systems (e.g. “Can AI do X?”) with no reference to human meaning or actions. We shall see in Blog 3 that such questions need reference to spheres of meaning in which humans function. The validity of such spheres of meaning (aspects) preesuppose a meaning-giver, i.e. a Creator.]