



Artificial Intelligence: The Good, The Bad, and Dangerous for Construction, Claims, and Legal Pros

By Pete Fowler
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Introduction by AI

“It’s not the tools that you have faith in - tools are just tools. They work, or they don’t work. It’s people you have faith in or not.” - Steve Jobs

“Write me a 1-2 paragraph magazine article introduction about artificial intelligence being a mind extension tool, as defined by Clark and Chalmers’ Extended Mind Theory.”

ChatGPT-3.5: *In the age of rapid technological advancements, artificial intelligence (AI) has emerged as an unparalleled tool, reshaping our understanding of human cognition and pushing the boundaries of what our minds can achieve. Drawing inspiration from the groundbreaking work of philosophers Andy Clark and David Chalmers, the concept of AI as a mind extension tool has gained momentum, revolutionizing our perception of intelligence. According to the Extended Mind Theory, our cognitive abilities are not confined within the boundaries of our skulls, but rather extend beyond them to include external tools. This article explores the profound implications of AI as a mind extension, highlighting its transformative potential and its capacity to augment and amplify human intelligence to unprecedented heights.*

Introduction (by Pete)

“The most important tool of the scientist is not any specific experiment or experimental apparatus, but the ability to think critically and independently.” - Isidor Isaac Rabi

ChatGPT, the first Large Language Model (LLM) Artificial Intelligence (AI) chatbot made publicly available, was released on November 30, 2022. It surpassed 1 million users in just 5 days, and now has over 100 million. I am a highly technical person with a Bachelor of Science in Construction Management and minor in Information Systems, but I am not an early adopter of technology. I prefer to wait and see if a tool is useful before I use it. I started using ChatGPT in March 2023, and I am happy to report that it is a useful tool.

What are Mind Extension Tools?

“Man is a tool-using animal. Without tools, he is nothing, with tools he is all.” - Thomas Carlyle

Explain extended mind theory at the high school level.

ChatGPT-4: *Imagine your mind is like a superhero. Now, superheroes sometimes use gadgets to boost their powers, right? Batman has his utility belt, Iron Man has his suit. These gadgets become a part of who they are, helping them to solve problems and face challenges. The extended mind theory says our minds can work like a superhero with gadgets. It suggests that our minds aren't limited to just our brains. Instead, they can spread out and use tools and objects in the world to help us think.*

Take your smartphone, for example. You use it to remember your friends' phone numbers, remind you about appointments, or calculate sums. The extended mind theory suggests that, in these situations, your smartphone is acting as a part of your mind, helping you remember things or solve problems. So, according to this theory, our minds are not just in our heads. They can extend into the world around us, using tools, objects, and even other people to think and solve problems better. It's like each of us is a superhero, using our gadgets to boost our powers.

“Give me a list of common Mind Extension Tools, as defined by Clark and Chalmers' Extended Mind Theory. Can you give me more examples?”

Bing Chat: *... some objects in the external environment can be part of a cognitive process and in that way function as extensions of the mind itself. Examples of such objects are written calculations, a diary, or a PC; in general, it concerns objects that store information. In their paper “The Extended Mind,” Clark and Chalmers present the idea of active externalism, in which objects within the environment function as a part of the*

mind. They argue that the separation between the mind, the body, and the environment is an unprincipled distinction... Other examples of such objects include smartphones, tablets, and other digital devices that store information. In addition to these devices, other examples include eyeglasses that correct vision, hearing aids that amplify sound, and even prosthetic limbs that become part of the body.

What are the oldest mind extension tools?

ChatGPT-4: *Mind extension tools have been used since prehistoric times. Here are a few examples: (1.) Stone Tools... [The response included further discussion, omitted here for brevity.] (2.) Fire... (3.) Cave Paintings... (4.) Writing Systems... (5.) The Abacus... These tools show that the idea behind the extended mind theory is not new; humans have been using objects in their environment to extend their cognitive capabilities for thousands of years. However, modern technology, from pen and paper to smartphones and AI, allows for cognitive extension on a scale never before possible.*

It's our company's job to conduct forensic investigations, often for lawyers and/or insurance professionals. These investigations include collecting, organizing, and summarizing lots of project data to transform it into information, and then applying a lifetime of subject matter expertise about building and buildings to decide what we think happened versus what should have happened, and how to solve the problem. It's intellectually difficult work with a mind boggling volume of data to consider and synthesize.

To do my job effectively and efficiently, I use many "mind extension tools" including: (1.) written notes, calculations, and drawings on paper; (2.) organizing files; (3.) typing into my computer; (4.) spreadsheets to organize and analyze data; (5.) finding codes and standards on the internet; (6.) scanning and printing documents, and spreading the pages on the floor to get my mind around complex matters; (7.) my smartphone to take photographs, to have it read out loud while I walk or drive, and to type or dictate notes... and even to make calls; (8.) meetings with team members, coordinated in electronic calendars, where we share our ideas; and (9.) presenting to clients for feedback about what they know and think, that I might not have known or thought of.

One of my most important "tools," that many fail to grasp the importance of, is an organized work place with these tools present, in their "proper home," always available. I use a kanban system to never run out of supplies like pens, paper, stickies, toner, staples, etc. This keeps friction and drama low. On the rare occasion I work in a less efficient environment my productivity decreases, like trying to manufacture complex products such as cars or computers out in the dirt and sunshine, the way we build buildings.

AI is my newest tool and it may soon be the most powerful.

AI as an Extension Tool

"The minute you read something that you can't understand, you can almost be sure that it was drawn up by a lawyer." - Will Rogers

I use AI chatbots for simple things like "Reorganize these into a numbered list in alphabetic order: [And I paste in text]" It's simple, but slick. I also ask: "Make this paragraph sound more professional," "Make this more clear," and "Make this shorter." I used AI to help a business owner friend improve a job description. It's not magic or perfect, but better and faster than interrupting a co-worker. I also asked for "Interview questions for potential Chief Operating Officer." The questions were good, and yes, I hired him.

So far, I find AI most useful for writing clearly about what I already know. I have been writing about building and buildings since the 1990s. In 2016 our company published our [“Proving the Obvious Using Google”](#) process because we must sometimes refute opinions of opposing experts that we think are silly. We search Google using the right prompt and save the first 10 sources, which virtually always tell us what we already knew, and use that as support for our expert opinion. The most time consuming part is summarizing the information and writing what it means clearly enough for everyone to understand. AI can often do this in seconds.

I recently testified in a deposition related to a construction site accident. It was clear one of the key players did not have a “safety focused culture.” It’s well known in construction that the right culture results in far fewer injuries, but how do I “prove” it? In the past, I would spend hours “Proving the Obvious Using Google” by collecting, organizing, reading, summarizing, and drawing conclusions. For this matter, AI saved hours of work and our client a lot of money. In a fraction of the time, I was able to compose a [Safety Culture Memo](#) that clearly articulated what I already knew. Of course, I backed it up with authoritative original sources, but I did not need to agonize over writing out my own summary.

On another project I saved time and money by prompting “Describe a Kathabar system in a production facility” and followed up with “Describe a desiccant dehumidifier.” This is a formal process in our company called “Explain it to Pete’s Mom.” Like our clients, my mom is very smart, but she never worked in construction and did not go to engineering school. We have to “explain it to Pete’s mom” all the time. AI makes this easier.

In our company, virtually everyone requires [“Construction Document Literacy,”](#) so we have been delivering this training for close to 20 years. I’ve intended to write an article explaining these 25 most important documents since we began delivering this training. It was going to take at least 50 hours, and I could never carve out the time. When learning to use ChatGPT, I used it to help me write that article in 5 hours! It blew my mind. AI was not perfect; and sometimes dead-wrong. But it saved 90% of the time.

Our technical consultants needed training in Defining the [“Standard of Care”](#) so we used AI to inform the discussion. It was fantastic. The information will become a published article and training module commonly used in our work.

These examples are barely scratching the surface of what AI will do for us, even next year.

Asking Good Questions to Get Good Answers

“Judge a man by his questions rather than his answers.” - Voltaire

I am trying to explain the importance of, and how to, ask an AI chatbot questions to get the best responses. Can you help?

Bing Chat: ...

- 1. Be specific:** Try to be as specific as possible when asking your question. This will help the chatbot understand what you’re looking for and provide you with more accurate results.
- 2. Use natural language:** Chatbots are designed to understand natural language, so try to ask your question in a way that feels natural to you.
- 3. Avoid jargon:** If you’re asking a question about a specific topic, try to avoid using jargon or technical terms that the chatbot might not understand.

4. Be patient: Chatbots can take a few seconds to respond, so be patient and wait for the chatbot to provide you with an answer.

5. Ask follow-up questions: If you're not satisfied with the chatbot's response, don't be afraid to ask follow-up questions to get more information.

Since, so far, I am only relying on AI to help me speed the work I already have expertise in, I just keep asking questions until it answers in a way that sounds like me.

The marketing professionals in our office are using AI in amazing and creative ways, engaging in "conversation," including feeding the chatbot information like real client testimonials, and having conversations that sound like two marketing savants brainstorming. It's fascinating and fruitful.

Our technology department have described amazing domain specific tools and capabilities for writing code that are far beyond anything I can use AI for as a building consultant, right now. Like me, some of their tasks are being completed in 10-20% of the time required before AI. They tell me "we exclusively use ChatGPT-4 (\$20/month). 3.5 (free) felt like a toy, 4.0 actually feels useful... Even with 4.0, I still get a lot of hallucination." In contrast, I actually prefer many of 3.5's responses, including for use in this article.

Dangers Ahead

"The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom." - Isaac Asimov

It may sound like I drank the Cool-Aide after singing AI's praises, but beware!

Explain the concept of AI Chatbots "hallucinating facts."

Bing Chat: *AI hallucinations in chatbots refer to incorrect results that are vastly out of alignment with reality or do not make sense in the context of the provided prompt. AI chatbots can respond grammatically or logically incorrectly or mistakenly identify an object due to noise or other structural problems. AI models can be convinced of completely untrue facts, responding to queries with made-up answers. For instance, an AI program like ChatGPT can fabricate a historical figure with a full biography and accomplishments that were never real.*

By now, most of us have heard about the New York lawyers who were sanctioned in June 2023 for using fake ChatGPT cases in a legal brief. ChatGPT was "hallucinating facts;" but they sounded so convincing that the lawyers who signed the brief did not think to look up the cited cases. So in our work, we must "inspect what we expect." If we don't know it to be true, then we must verify it.

I asked ChatGPT for the applicable building codes for residential site drainage. It's initial responses were helpful. But after a bit of back and forth to get more specific, a saying my mother taught me came to mind: "Often wrong but never in doubt." AI is dangerous, because it always sounds smart, unless you know it's wrong.

I have asked AI to summarize books I have read: Sometimes it does great. And sometimes it's dumb; grammatically correct, but dumb. AI is a powerful tool... Like a chainsaw. Be very careful asking questions that could have wrong answers that you don't know the answers to. I only rely on it for work where I have domain specific expertise.

Conclusion

There will be two kinds of companies at the end of this decade. Those who are fully utilizing AI, and those who are out of business.” - Peter Diamandis

I am writing an article, pasted in below. Can you draft a conclusion? [Response was too long.] Can you make that shorter?

ChatGPT-3.5: In today's fast-paced world, artificial intelligence (AI) serves as a game-changing mind extension tool, reshaping our perception of intelligence. Inspired by the Extended Mind Theory, AI can amplify human cognition, aiding professionals in various fields like forensic investigations and claims. By asking precise, natural language questions, users can harness AI's potential effectively. However, prudent evaluation is essential to avoid reliance on AI for critical decisions. Embracing AI is no longer optional; it's a necessity for staying competitive in this technological era. Striking the right balance between human expertise and AI capabilities will lead us to a future of unprecedented possibilities and innovation.

In the late 1700s, steam engines brought a significant change to people's lives. They improved manufacturing and transportation, allowing cities to be built away from rivers, which were previously essential for transport and power. This led to a boost in the economy and better living conditions for many. Today, AI serves as a similar catalyst for the mind, enabling users to become smarter and more productive at an incredible pace. AI holds the potential to revolutionize learning and productivity, ushering in a remarkable era of progress.

Of course, modernity has always had its detractors; those who pine for the good old days. Complaining won't stop AI's transformative power.

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