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COULD AI HALLUCINATIONS INDUCE STRATEGIC THINKING?

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ABSTRACT

AI processes in general, and generative AI interactions in particular, could lead to hallucinations. Hallucinative AI statements are incorrect or misleading information resulting from a search by the AI model in malignant or inaccurate databases or an aberrant investigative approach. These hallucinations could vary in shape and structure, but one can consider a hallucination “anytime an AI responds incorrectly to a prompt that it should be able to respond correctly to.” The outcome statements are presented as facts and provided within a factual context despite their flaws.

The impact of hallucinative statements is, according to contemporary views, overwhelmingly negative. Non facts and quasi facts could mislead research, undermine outcomes, or blur conclusions. And are looked at as a damaging force.

Yet hallucinative AI outcomes could have a positive side. This will be the focus of the following analysis. The hypothesis here is that “Generative AI derived hallucinations could have a positive impact on the process and outcomes of business strategic thinking.”

The article starts with an exploration of the very concept of Generative AI derived hallucinations. Analysis describes the triggers, the process, the outcome, and the possible corrective measures. Analysis goes further to explore the possible link between hallucinative Generative AI outcomes and the process of strategic thinking in business. Link between hallucination driven scenarios and the very formulations of strategies in a business context is then explored.

The outcome is a set of hypotheses that relate hallucinations to the process and outcome of business strategy formulation.

Sources of basic analysis vary but work done on Generative AI hallucinations is explored. Strategic thinking concepts and their relationship to the Generative AI hallucinative outcome are also explored.

KEYWORDS: - Artificial Intelligence, hallucination, strategic thinking.

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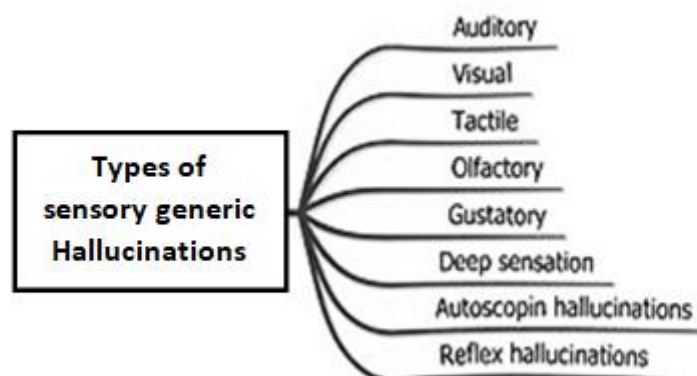
1. WHAT ARE HALLUCINATIONS: GENERIC AND AI RELATED?

Put in generic terms, hallucination as a process and hallucinations as nouns have a great variety of definitions. The one that the author subscribes to is that where hallucination as a process is tantamount to "... sensory perceptions that appear in the absence of stimuli"(Cohut, 2020). And hallucinations as nouns are equated to a figment of imagination, an imaginary occurrence, or a fictitious invention. It could also mean a false belief or impression; illusion; delusion. Or a sensory experience of something that does not exist outside the mind, caused by various physical and mental disorders, or by reaction to certain toxic substances, and manifested as visual or auditory.

Seen in Generative AI terms, hallucination is a phenomenon where a large language model (LLM)—often a Generative AI [chatbot](#) or computer vision tool, perceives patterns, objects or algorithms that are nonexistent or imperceptible to an observer. Outcomes, then, are inaccurate, nonfactual, and nonsensical statements or objects rendering analysis futile. LLM hallucinations could be input-conflicting, context-conflicting, and fact-conflicting.

Hallucinations could also be seen from an individual or business angel. They can, at individual level, be visual (sight hallucinations), auditory (sound hallucinations), olfactory (smell hallucinations), gustatory (taste hallucinations), or tactile (touch hallucinations). (Cohut, 2024). They can, at business level, as we said earlier, take the form of factual errors or inaccuracies, fabricated information, harmful misinformation and or weird answers.<https://builtin.com/artificial-intelligence/ai-hallucination>)

Figure: Types of sensory generic hallucinations



2. TRIGGERS, IMPACT, AND LIMITATION.

Hallucinative generative AI outcomes could be the result of many variables, but the broad underlining factor is data. Biased and skewed data training could lead to hallucinative outcomes. But so are also false and wrongly labelled data, factual data mistakes, biases and contractions in data, insufficient programming to interpret data correctly, complex data models and vague user provided data context. These could only enhance the hallucinative impact. (Mukherjee et al, 2023) (What are AI Hallucinations? Examples, Causes and how to spot them (Technopedia.com)).

The large language models that underpin Generative AI tools are trained on massive volumes of data, like articles, books, codes and social media posts and they are very good at generating text that is similar to whatever they” saw “ during training. Flaws underlined above could undermine large language model outcomes and open the door for hallucinations. Complex or biased AI models, for example, could trigger serious complications in academic research. ChatGPT did cite sources for information that are either not correct or do not exist, for example. A study conducted in the Cureus Journal of Medical Science showed that out of 178 total references cited by GPT-3, 69 returned an incorrect or nonexistent Digital Object Identifier (DOI) (Bhattacharyya et al, 2023).

Limiting hallucinations would require several measures going all the way from resort to high-quality training of data and use of data templates to rationalize the AI model. Testing models and refining the system belongs to these measures too. Resorting to human judgment could be one of the most effective tools here. (What Are AI Hallucinations? | IBM).

3. COULD HALLUCINATIVE GENERATIVE AI OUTCOMES BE POSITIVE?

One may make a distinction between using a Generative AI model as a content generator and using it as a factual response mechanism. But the question remains, could the hallucinative outcomes of Generative AI deliver something positive?

The answer to the question “could generative AI contribute something positive at all” is a careful yes. This is a question that arises in the very first discussion of the issue of AI hallucinations. A broad rather philosophical answer is that the beauty of Generative AI is its potential for new content, and it is, to that extent, a positive addition. Generative AI hallucination can, for instance, streamline data visualization by exposing new connections and offering alternative perspectives on complex information. This is creative but not factual!

One may then, again, make a distinction between using a Generative AI model as a content generator and using it as a factual response mechanism.

It could, as a content generator, contribute in an unusual way to several fields. Artistic creations or visual art learning models can produce “hallucinatory” images leading to new artistic space! Virtual realities within gaming and game enhancement experiences could potentially lead to the nearest thing to a hallucination. (Understanding AI Hallucinations: Causes and Consequences, data Scientist, 17 Apr 2024).

4. COULD HALLUCINATIVE OUTCOMES OF GENERATIVE AI REACH THE STRATEGIC THINKING DOMAIN?

If hallucinative Generative AI could deliver something positive, could that reach the realm of strategic thinking? The following is an attempt at answering this question. The goal is to formulate hypothesis that could induce further research.

- **What is strategic thinking?**

Hallucinative Generative AI outcomes could contribute to strategic thinking. To reach that conclusion let us consider what strategic thinking is and how do strategic thinking elements relate to the possible aberrant outcome of a Generative AI process.

Strategic thinking connotes a process of conceiving a vision and construing modes of vision actualization. The vision is built around a distant result or results featuring within a distant and blurry future. “A vision is a mental perception of the kind of environment an individual, or an organization, aspires to create within a broad time horizon and the underlying conditions for the actualization of this perception “. A vision is formulated by explicitly identifying a domain for competitive behavior or arena, a set of sources of competitive strength and a profile for resource capability. (El Namaki, 1992).

It is a conceptualization of a new and desirable future reality that can induce achievement and motivate followers. It could also be a “concept for a new and desirable future reality that can be communicated throughout the organization” (El namaki, 1992).

A vision belongs to what we may term a process of direction setting. Direction setting connotes the identification of a vision and a strategy for getting there (Nutt and Backoff, 1997). It requires challenging con-vocational wisdom and analytically looking for patterns that answer very basic questions about the business we are involved into (El Namaki, 1992).

This future could constitute scenes within a scenario or scenario. A scenario that may not relate to today’s realities. They could very well be the outcome of science fiction, or a construction based on an extrapolation of existing or emerging sciences.

- **Could Generative AI hallucinations influence strategic thinking?**

It is the author’s contention, or hypothesis, that Generative AI hallucinative outcomes could influence the process and contents of strategic thinking. This can go all the way from the conceiving of a vision to the actual conduct of strategic drivers.

- **Vision**

Generative AI hallucinations could contain plausible scenarios conducive to the process of projecting distant future environments and the positioning of the organization within that amorphous whole. Visions could emerge from these cloudy images.

Those could vary in sharpness according to the level of strategic thinking and the measure of hallucination.

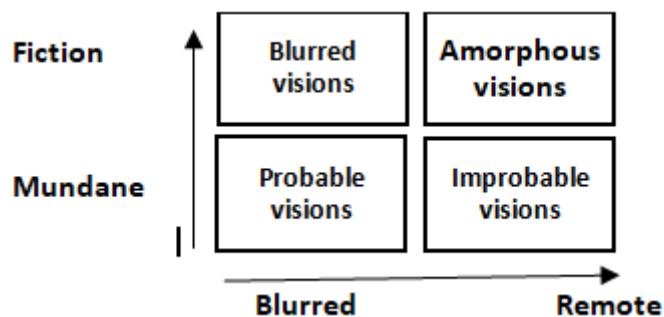
Strategic thinking is considered, for the purpose of the following analysis, mundane or fictitious. Mundane strategic thinking relates to the realities of industry and environment as existing today. Fictitious strategic thinking derives strategic visions from longer term perspective changes in industry and environment.

Hallucinative Generic AI outcome is considered either blurred or remote. Blurred outcome connotes an element of reality but lack of acuity. Remote outcome reduces viability to a bare minimum.

The following figure illustrates the possible outcome of the interaction of those variables.

Figure: Hallucinations derived vision conception model

Strategic thinking



Hallucinative outcomes of AI research

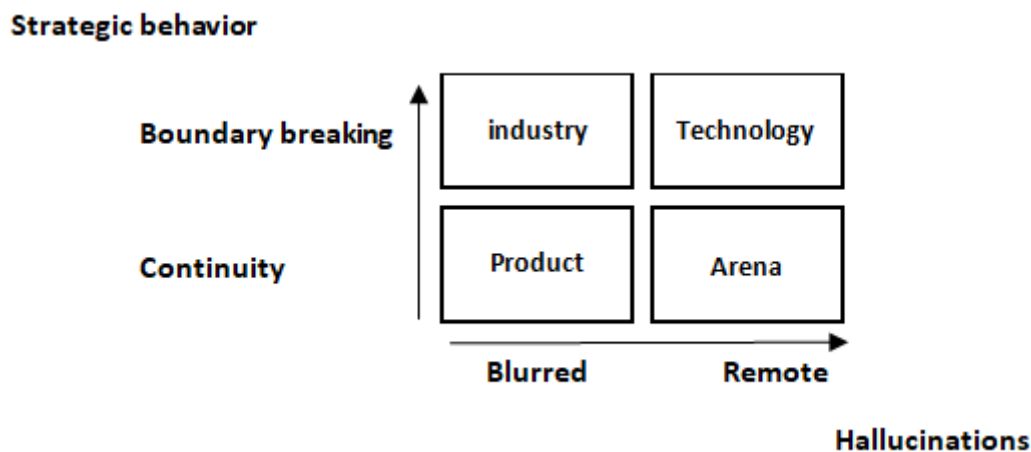
Four states of vision could emerge from this interaction. The most extreme are those of “probable visions” and “amorphous visions.” A “probable vision” could reflect blurred hallucinative outcomes and mundane strategic thinking modes. On the other extreme there is the “amorphous vision” or the outcome of remote hallucinative outcomes and the fiction-rooted strategic thinking mode.

- **Strategic behavior and strategy formulation**

Generative AI hallucinations could influence the process of strategy formulation and the outcome of strategic thinking as well. The following figure displays this relationship. The figure features two states of strategic behavior: “continuity behavior” and “barrier breaking behavior.” These behavioral patterns are related to two hallucinative outcomes: “blurred hallucinative outcomes” and “remote hallucinative outcomes..” Blurred Generative AI hallucinative outcomes reflect a measure of relevance as well as acuity. Remote Generative AI hallucinative outcomes project distant and amorphous outcomes irrelevant to the original enquiry.

The outcome of interaction of patterns of strategic behavior and expressions of hallucinative turmoil could lead, in the authors view, to four focuses of strategic behavior. An industry focus, a product focus, an arena focuses and a technology focus.

Figure: Hallucinative statements impact on strategic behavior.



An industry focus could connote strategic behavior within the boundaries of the industry i.e., the different driving forces of that industry from the power of buyers and the power of suppliers to the threat of new entrants and the threat of substitution. All these driving forces would be influenced by the blurred hallucinative statements of Generative AI.

Product focus would touch issues such as product features and product positioning.

The Arena focus would explore the boundaries of the area where the company or business is operating and the extent to which this arena could contract, expand, merge, or even disappear altogether.

Finally, technology focus could explore the limits of existing technology and the dynamic forces of that technology. Key issue here is the impact of fundamental science shifts on the technologies of the business or the industry in question.

5. SUMMARY AND CONCLUSIONS

AI processes in general, and Generative AI outcomes in particular, could lead to hallucinations. Hallucinative AI statements are incorrect or misleading information resulting from a search by the AI model in malignant or inaccurate databases or an aberrant investigative approach. These Hallucinations could vary in shape and structure, but one can consider a hallucination “anytime an AI responds incorrectly to a prompt that it should be able to respond correctly to.” The outcome statements are presented as facts and provided within a factual context despite their flaws.

The impact of hallucinative statements is, according to contemporary views, overwhelmingly negative. Non facts and quasi facts could mislead research, undermine outcomes, or blur conclusions. And are looked at as a damaging force.

Yet hallucinative AI outcomes could have a positive side. The hypothesis here is that AI derived hallucinations could have a positive impact on the process and outcomes of business strategic thinking. (“COULD AI HALLUCINATIONS INDUCE STRATEGIC THINKING? – International ...”)

Analysis explores the possible link between hallucinative Generative AI outcomes and the process of strategic thinking in business. Vision conceiving as well as strategic thinking processes are related to the hallucinative outcomes of Generative AI. Two figures illustrate the relationship and impact.

The outcome is a set of hypotheses that relate hallucinations to the process and outcome of business strategy.

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