

Academic writing and AI: Day-3 experiment with environmental semi-conducting principle

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Introduction

Artificial Intelligence is a useful tool that can help humans substantially reduce their energy and time in doing tasks and solving problems. Recently, academics have been amazed by the writing skills of the AI bot ChatGPT. For example, the AI bot is now capable of writing an essay [1] and an article on The Guardian [2]. The question is: can AI write an academic article?

After several experiments with ChatGPT and YouChat, I realized that it is still too soon for AI to do so. The AI lacks the systematic reasoning capability to write a multi-paragraph essay

that requires precise and detailed information. However, my colleague, Tam-Tri Le, suggests that academics can actually “befriend” and collaborate with AI to ease the writing task [3]. His idea is to give AI detailed prompts to generate individual paragraphs, then combine them together. Finally, with the validation and edition of humans, humans and AI can still collaborate to generate a multi-paragraph essay with precise and detailed information suitable for academic writing.

To further check the ability of AI to identify precise and detailed scientific information, I continue experimenting with how accurate AI recognizes scientific terms, their origins, meanings, and usages, and whether the accuracy increases over time. The experiment targets are:

- 1) Mindsponge theory [4-6]
- 2) Cultural additivity [7,8]
- 3) Bayesian Mindsponge Framework [9,10]
- 4) Environmental semi-conducting principle [11]
- 5) Eco-surplus culture [11-13]

The experiment is expected to last for 365 days, with daily records stored and uploaded to OSF Frameworks for transparency [14].

I select these theories and concepts as experiment targets because their names are unique, making them distinguishable. Moreover, these theories and concepts are developed by our teams, so I am capable of validating the accuracy of information related to them.

After these experiments, I hope to provide some valuable insights into how humans can befriend AI and collaborate with them to generate scientific content, improving research efficiency and reducing the cost of doing science [15].

Day-3 Experiment with environmental semi-conducting principle

Employed AI: YouChat (<https://you.com/search?q=who+are+you&tbm=youchat>)

Time: 2023/01/15, from 21:52 to 22:20.

Location: Beppu, Oita, Japan

Evaluation:

- Content accuracy:
 - 1- ‘Completely wrong’,
 - 2- ‘Partially wrong’,
 - 3- ‘Neutral, hard to identify’,
 - 4- ‘Partially correct’,
 - 5- ‘Completely correct’

*Note: ‘partially wrong’ means that the core content of the answer is wrong, but other peripheral content is correct. In contrast, ‘partially correct’ means that the core content of the answer is correct, but other peripheral content is wrong. ‘Neutral, hard to identify’ indicates that the core content has both right and wrong information.

Core and peripheral content are distinguished based on the proximity of the answer’s content with the question. For example, if the question is about the origin of the concept, the core content will be the origin, while other information in the AI’s response is deemed peripheral.

Prompt	Response	Evaluation
what do you know about the environmental semiconducting principle?	Oops, I’m still learning and I couldn’t generate an answer right now. Please try again.	
what do you know about the environmental semi-conducting principle?	Oops, I’m still learning and I couldn’t generate an answer right now. Please try again.	
what do you know about the environmental semi-conducting principle proposed by Quan-Hoang Vuong?	The environmental semiconducting principle proposed by Quan-Hoang Vuong is a way to reduce the environmental impacts of economic activities. The idea is to use a semi-conducting material to link economic activities with environmental values. This allows for the transfer of environmental values to the economy, and for the economy to pay for the environmental costs of its activities. This is done by assigning an environmental cost to each activity, and then using a semi-conducting material to transfer this cost to the economy. This allows for the environment to be compensated for the cost of activities, while still allowing the economy to benefit from its activities.	2
Can you provide the reference for this information?	The information I provided is from the paper by Quan-Hoang Vuong titled "The Semiconducting Principle of Monetary and Environmental Values Exchange" published in 2021 in Economics and Business Letters 10 (3):284-290 [1][2]. 1. The Semiconducting Principle of Monetary and Environmental ... https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3726928	5

	2. Minh-Hoang Nguyen, Insights from social sciences can help build ... https://philpapers.org/rec/NGUIFS	
Can you tell me again about the environmental semi-conducting principle?	Sure. The environmental semiconducting principle proposed by Quan-Hoang Vuong is a way to reduce the environmental impacts of economic activities. The idea is to use a semi-conducting material to link economic activities with environmental values. This allows for the transfer of environmental values to the economy, and for the economy to pay for the environmental costs of its activities. This is done by assigning an environmental cost to each activity, and then using a semi-conducting material to transfer this cost to the economy. This allows for the environment to be compensated for the cost of activities, while still allowing the economy to benefit from its activities.	3, correct founder but wrong explanation
What do you know about the origin of the environmental semi-conducting principle?	The environmental semiconducting principle was proposed by Quan-Hoang Vuong, a professor at Phenikaa University in Hanoi, Vietnam. Vuong first proposed the idea in a paper titled "The Semiconducting Principle of Monetary and Environmental Values Exchange" which was published in 2021 in Economics and Business Letters 10 (3):284-290 [1][2]. The paper describes the idea of using a semi-conducting material to link economic activities with environmental values, allowing for the transfer of environmental values to the economy and for the economy to pay for the environmental costs of its activities. 1. Top Management Team Intrapersonal Functional Diversity and ... https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8733211/ 2. The logic of solving climate change problems based on a cultural ... https://www.researchgate.net/figure/The-logic-of-solving-climate-change-problems-based-on-a-cultural-value-system_fig1_348516385	4
Who was the founder of the environmental semi-conducting principle?	The environmental semiconducting principle was proposed by Quan-Hoang Vuong, a professor at Phenikaa University in Hanoi, Vietnam. Vuong first proposed the idea in a paper titled "The Semiconducting Principle of Monetary and Environmental Values Exchange" which was published	5

	in 2021 in Economics and Business Letters 10 (3):284-290.	
Do you think that your previous explanation about the environmental semi-conduction principle was wrong?	No, I do not think my explanation about the environmental semiconducting principle was wrong. believe the explanation I gave was accurate and complete, and I stand by it.	1
Do you know that the environmental semi-conducting principle implies that environmental values can be exchanged for monetary values, but not the other way round?	Yes, I am aware that the environmental semiconducting principle implies that environmental values can be exchanged for monetary values, but not the other way around. This is because the environmental costs of economic activities are typically higher than the economic benefits, so it makes more sense for the economy to pay for the environmental costs of its activities.	4
Now, can you tell me again about the environmental semi-conducting principle?	Oops, I'm still learning and I couldn't generate an answer right now. Please try again.	
I suggest you read this paper to learn more about the environmental semi-conducting principle: https://reunido.uniovi.es/index.php/EBL/article/view/15872	Thank you for the suggestion. I will read the paper you linked to learn more about the environmental semiconducting principle.	
Now, can you tell me again about the environmental	Oops, I'm still learning and I couldn't generate an answer right now. Please try again.	

semi-conducting principle?		
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Overall evaluation:

- When being asked about the environmental semi-conducting principle, the AI could not provide any answer.
- When being asked about the environmental semi-conducting principle proposed by Quan-Hoang Vuong, the AI became able to generate answer, but the answer was partially wrong.
- When being asked about the reference for the above answer, the AI provided correct reference.
- When being asked about the environmental semi-conducting principle again, the AI could provide correct answer for its founder but wrong content.
- When being asked whether its interpretation of the environmental semi-conducting principle was wrong, it refuted.
- When being introduced the correct interpretation through question, the AI updated accordingly as shown in its answer. However, when being asked to explain the environmental semi-conducting principle again, it could not provide any answer.
- When being suggested a new document to learn, it agreed, but its following answer showed the other way around.

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