Symbiotic Co-Creation with AI

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1. Human-AI Symbiosis

In the 1960s, Licklider predicted that humans and computers would form a symbiotic relationship, defined as the cooperative coexistence of two biologically distinct species in close interaction [1]. This relationship would enhance human cognitive capabilities by supporting real-time operation at the symbolic level. Today, the AI and HCI communities are raising the urge to define the specific nature of the **human-AI partnership: between tool and collaborator** or existential threat. How does interacting with AI in a co-creative context help rethink this relationship and update Licklider's view of symbiosis today?

2. The Language Problem

> The basic dissimilarity between human languages and computer languages may be the most serious obstacle to true symbiosis.
>
> —JCR Licklider, *Man-Computer Symbiosis*

- Language, the biggest obstacle to Human-AI symbiosis
- Tension between symbolic action and set of instruction
- Today, a convergence towards **natural language interaction**
- Representations beyond text label: SSL, multimodal

3. Creative Affordances of AI interfaces

Boden's typology of creativity modes [2]:

(a) Combinational: prompt engineering

(b) Exploratory: latent space walks

(c) Transformational: style transfer, crossmodal

4. Inputs: Symbols Beyond Prompt

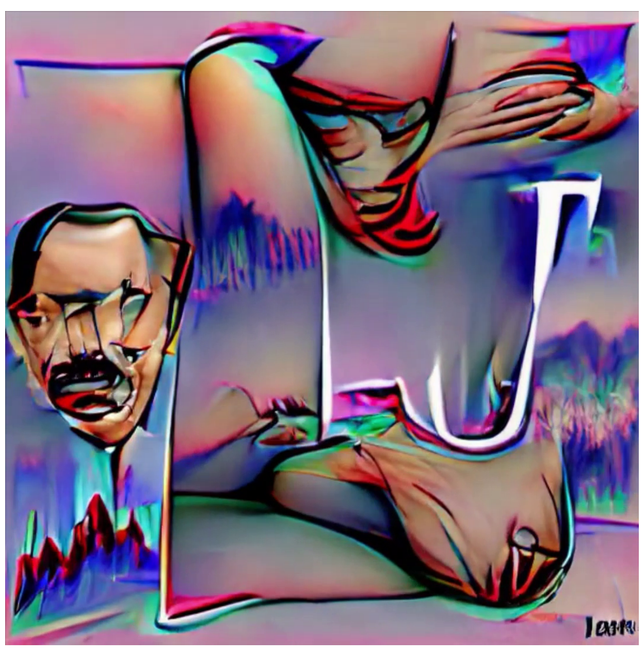
Tangible Interfaces (TUI)

- Lack of **embodiment** of human-AI interaction
- Artificial imagination modeling as **craftsmanship**
- Neural **physicalization** for incarnated explainability

Brain-Computer Interfaces (BCI)

- Speculative design: **non-verbal, seamless communication**
- How? visual imagery reconstruction and language decoded from brain activity

(a) *Latent Organism* (2021-2022) is a whole body e-textile interface to navigate in the latent space of a text-to-mesh model.



(b) *Dream paintings* (2022) generated with diffusion models from semantic categories extracted from brainwaves during sleep.

(c) *Strange Loops* (2022-2023) is a series of multimodal performances composed of generative music and light controlled by brainwaves.

5. Discussion and Conclusion

- The tool-collaborator dichotomy misrepresents the nature of technology, where human and AI are co-constitutive [3].
- TUIs and BCIs are proposed as embodied and seamless means of communication with AI, beyond natural language input.
- AI as support for rule-breaking, transformational creativity is yet to be defined.

References

[1] J. C. R. Licklider. Man-Computer Symbiosis. *IRE Transactions on Human Factors in Electronics*, HFE-1(1):4–11, March 1960.

[2] Margaret A. Boden. *The creative mind: myths and mechanisms.* Routledge, London ; New York, 2nd ed edition, 2004.

[3] Bernard Stiegler. *Technics and time.* Meridian. Stanford University Press, Stanford, Calif, 1998.