

The Digital that Intervenes with the Brain that Appreciates the Digital

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The art industry is perhaps one of the sectors hit hardest from the coronavirus crisis. Exhibition spaces have become inaccessible, and opportunities to see artworks in real life have been stripped away from audiences. Countless exhibitions have been forced to either be cancelled or postponed to an unspecified date.

Ironically, this exhibition had been planned around the thesis of “alternative narratives”, although during its preparation phase no one had predicted the rise of a novel coronavirus pandemic in a few months’ time. In this way, it is almost like a self-fulfilling prophecy.

The self-fulfilling prophecy is a psychological concept; it’s a phenomenon where prophecies, even if baseless – mere rumors or words that are spoken casually – eventually come true as people, including the person making the prophecy themselves, behave in a way that confirms those expectations.

In a broad sense, the oracles of Delphi can be seen as an example of this. In Japan, we sometimes call this kotodama, the mystical belief that words spoken aloud will manifest into reality. There are also customs, prominent in East Asia, to avoid saying a person’s real name too excessively as it was believed to embody the essence of the subjected person (this is also known as naming taboo, or imina in Japanese).

I am not going to draw a hasty conclusion that the title of this exhibition predicted the future we now experience. However, at the heart of our inner minds and unconscious behavior, there is a force which propels us to conform to

the words which we have already uttered, and I do believe that as a byproduct of the corona crisis, the exhibition itself has unintentionally manifested this fundamental human predisposition to self-prophecy. While the physical space remained inaccessible, the exhibition opened in the form of digitally tracing the realities of “alternative narratives”. It was not once installed in a real physical space, and all programmes, including exhibition tours, were executed virtually.

Granted the arguments for and against appreciating artworks virtually has been a topic of much discussion, a recent research on the subject, supervised by leading MIT neuroscientist Pawan Sinha and conducted by Cuseum^{*1}, provided an interesting insight, though with some contentious points. It is probably reasonable to assume this research, which was also featured in *Bijutsutecho*^{*2}, has been widely read in Japan.

The research compared brain activities of seeing artworks in four different modes, both in real life and on digital interfaces (AR, VR, and 2D photographs). Electroencephalograms, or EEG (brain waves), were deployed to accurately detect electrical activities in each participant’s brain. The participants were nine people with no background in art; they were shown randomly selected images of paintings with a one-minute interval while the EEG measurements were conducted. After each interval, the participants were verbally questioned about their memory of the artwork, to describe it in detail (test of short-term memory). Consequently, another session was held one week after the experiment, in which the participants were again verbally

questioned about their memory of the same artworks (test of long-term memory).

In the EEG results, nervous activities comparable to that of real-life art appreciation were observed with VR and AR modes, especially in the Gamma-band. The Gamma-band refers to the brain wave range between 31~120 Hz, considered to be associated with higher mental functions such as meditation and intense concentration. It has been shown that at around 40 Hz, the accumulation of β -Amyloid is suppressed, possibly limiting the development of Alzheimer’s disease^{*3}.

In the area of short-term memory, 2D photographs fell short of other modes, yet there was no major difference in results among the other three modes. Interestingly, with long-term memory, VR and 2D photograph showed weaker results while AR showed increased results, suggesting greater prospects for online art appreciation as opposed to that in real life.

That being said, we should consider the following cautionary points before basing our arguments on this research. First is the fact that some research findings indicate the EEG-detected Gamma-band brain waves in many experiments to be an artifact of electromyographic activities, as well as slight eye movements. Hence a deliberate examination is required to identify whether the Gamma-band brain waves are in fact generated by the brain activities.

Secondly, Cuseum is a corporation that offers AR technology solutions to museums, operating commercial enterprises such as the Museum From Home service. If the research

turned out to be sponsored by Cuseum, credibility of the results being neutral would inevitably decrease as the results are supportive of the content of the commercial service. It should also be taken into account that the publication of these results coincided with the release of Museum From Home.

Moreover, it is worth noting the number of samples in this research being only 9, bringing to question whether this was an adequate scale to arrive at the conclusion. Similarly, we should bring our attention to the fact that this is not a peer-reviewed paper, despite being supervised Pawan Sinha, a leading neuroscientist. In light of this, there is a risk of this perception turning into a misleading social phenomenon like the Mozart Effect, which was later proven to be an artefact. When an underdeveloped idea is established as fact in the minds of the masses, it becomes enough of a foundation for the manipulation of large capitals involved, even if the premise is later proven to be scientifically false; we must therefore stay vigilant in reminding ourselves of the structural fragility of science communication.

Footnotes

*1: “Newrological Perceptions of Art Through Augmented & Virtual Reality.” *Cuseum*. (accessed July 7, 2020)

*2: Naoko Kunigami. “Is art appreciation in AR comparable to the real thing? US startup announces research results.” *Bijutsu Techo*. (accessed July 5, 2020)

*3: *Nature*. 2016 Dec 7; 540(7632): 230-235