

AVERAGE IS IRRELEVANT.

Work and educational space design needs to be derived from different neurological workings of the brain.

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One needs to consider the extremes - particularly if they carry an extraordinary cumulative effect. "Black Swan", Nassim Nicholas Taleb

I. EXTENDED ABSTRACT

Experiences alter the fine details of our brains, as our bodies are constantly looking to establish equilibrium within the environment. It is crucial that institutions and work spaces of innovation would have diverse spatial conditions to cultivate many different kinds of minds.

Yet innovation incubators as well as other contemporary work spaces often follow simplistic design visions. Crude schemes may provide adequate conditions for working, but at best, only for certain people.

It would not be wrong to say that continued use of these designs is both insensitive and discriminating towards diversity, and arguably inhibits innovation.

In order to nurture our inventive capacities, we have to understand how new thinking emerges and to use these findings to create a more dynamically fertile environments.

I argue that better understanding of how different brains function, can enrich and enhance the uniqueness and individuality of the users, to improve the work environments and create the ultimate effect of which to open unexpected paths to innovation.

"There is no longer any question that brain tissues create the potential for having certain types of experiences, but there is also no doubt that the experiences especially early ones, can change the fine detail of the brain forever." (Jaak Panksepp, 2004)

Expanding the user profile of the space from the average to the spectrum of extremes, taking into account variabilities in attention, perception, and anxiety levels, we can start to define the factors that can influence the design decisions.

According to Panksepp (2004) all of consciousness was built on affective value system during long course of brain evolution. Since our energy resources are limited we can only participate in the information which is vital for our survival. Therefore our brains are wired to ignore repetitive information, and events/objects in their surrounding relationships matter more than absolutes. (Helson, 1964)

Hubel and Wiesel found that whereas retinal neurons preferred dots, an otherwise quiescent cortical neuron would respond vigorously if and only if a straight line at 90 degree angle was shown. That means, our perception is put together by these primary visual cortical neurons that further in hierarchy add up to contours and shapes. To analyze a space in terms of visual stimulus we can use the theory of corners from the findings of neuroscientist Irving Biederman of the University of Southern California. He found that corners and high degree curves are critical to the recognition of everyday objects. (Martinez-Conde, S and Macknik, S. L. (2013) Dark and Bright Corners of the Mind. Scientific American Mind 24, no 5, 20-22)

"Brains develop concrete perceptual structures, capabilities and sensitivities based on PROMINENT FEATURES of the rearing environment, and then are more able and more likely to see those features in the world around them." (WEXLER - LOOK UP BOOK)

Enriched environments force new neural connections and induce exploratory behavior. These spaces would be a good fit for people with traits of ADHD as they are more likely to carry dopamine D4 genes, which by nature results in personality traits of novelty seeking. From Donald Hebb we know that neurons that FIRE together WIRE together. Larger networks between neurons enable more complex and advanced thinking. Larger amounts of dopamine in the brain, is thought to be especially at an advantage of making novel connections between ideas, as he has access to a larger pool of data in the working memory. One of the most remarkable features of contemporary enrichment studies has revealed that the changes in the brain can be detected even when the enriched experience is provided to an adult or aged subject.

(Nature review/Neuroscience. VOL1 December 2000. 191-198)

Yet, not everybody is able to handle enriched environments, or excessive visual noise. At any given moment working memory is said to be able to hold 4-7 items in reserve. (Alan Baddeley 1970).

Future Work

It's about working short term memory as well as long term memory, which get fused with our subconscious brain activity.