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# Memory and Productivity

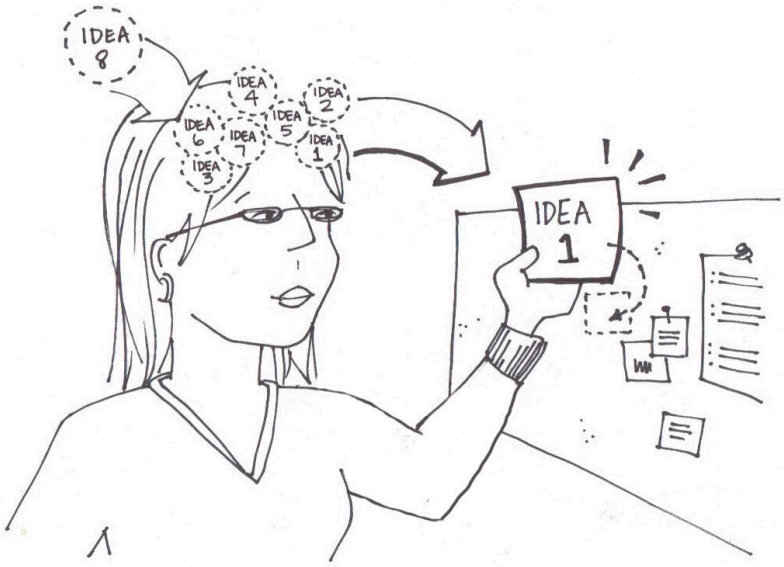
A White Paper by the Haworth Knowledge and Research Team

Are messy desks a sign of creativity? Are clean desks a sign of efficiency? Are creativity and efficiency fundamentally incompatible? Which of these is more related to intelligence?

Many of the observations relevant to the issue of "messy desks" are derived from the writings of researchers focused on how the brain "makes a mind" and how our physical bodies can be conscious and self-aware of our surroundings.[1] People constantly absorb and interact with their environments, depositing traces of their thoughts consciously and unconsciously into their surroundings. Theorists have stated that human cognition is highly flexible and adaptive, but very limited without the use of external aids.[2] Workers can very quickly ramp up their mind to maximum memory capacity but then need to off-load[3] some information into their environments to support retrieval. Memory, thought, and reasoning are all significantly constrained without the use of external cues. Because everyone has a limited capacity for thinking, knowledge workers drastically improve on their ability to retain and remember information by using large portions of the environment as "scratch paper".

## Post-it™ Notes and Memory Tools

Cognitive ergonomics assumes that the way people see, hear, think, pay attention, make decisions, and remember can have direct implications for the design of the workspace and the cognitive artifacts that they use.[4] Cognitive artifacts are defined in the Handbook of Applied Cognition as "human-made objects, devices, and systems that extend people's abilities in high-level perception; encoding and storing information in memory, as well as retrieving it from memory, thinking, reasoning, and problem solving."[5] In simpler terms, cognitive ergonomics explains how cognitive artifacts expand a worker's capacity to think in and utilize their environment by functioning as reminders of thoughts and ideas. Post-it notes placed around the workstation are an example of a very simple, everyday use of a cognitive artifact.[6] Other common thought and memory tools include whiteboards, team rooms, flip charts, collaborative environments, tackboards, and active (or open) storage. Utilizing the concepts of cognitive ergonomics and artifacts, a company can leverage its intellectual assets by creating work environments that help people think and remember.




We can only process seven ideas at a time. So when an eighth idea comes along we must offload one into our environment.

[1] Harth, E. (1993). The Creative Loop: How the Brain Makes a Mind. New York: Perseus Books.
[2] Olubunmi, S., & Adesope, O. (2007). Using Cognitive Artifacts for Learning. Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications (pp. 2960-2965). Chesapeake, VA: AACE.
[3] Dennett, D. C. (1996). Kinds of Minds: Toward an Understanding of Consciousness. New York, NY: Basic Books.
[4] Brand, J. (1997). www.pdkconsulting. com/cognitiveergonomics/.
[5] Durso, F. T. (1999). Handbook of Applied Cognition. Hoboken, NJ: John Wiley and Sons, Ltd.
[6] Brand, J. (2010) email


## Piles? Or Files?

If a workers' productivity literally depends on how far away they are from elements needed to perform tasks, then a well organized work environment can make a big difference. But what is considered organized for one worker may not be effective for another. What may appear to one person as a "pile" may be an intricate filing system for another, arranged to represent different categories or components of the worker's ongoing tasks or projects.

People feel better about their jobs when they can claim some control and ownership in the work they do as well as in the place in which they do it. User control has a large impact on productivity, creativity, and overall workplace satisfaction. One of the important psychological factors related to productivity is the ability to alter the work environment. In many cases, the perception of control is often more important than anything else.[7] Granting individuals permission to control the appearance of their environments and how they off-load information into those environments — piles, open storage, etc. — can improve a person's perception of his or her job as well as other aspects the actual work experience.

So, ultimately, any kind of organizational system should reflect what the worker actually needs and uses for storage and retrieval. Individual styles and preferences should be respected and supported. The key consideration should be what method of organization functions most efficiently for the user. As long as the pile means something to the person who made it, it is effective.

[7] McLennan, J. F. (2004). The Philosophy of Sustainable Design. Bainbridge Island, WA: Ecotone Publishing Company

## Are Clean Desks Akin to Environmental Lobotomies?

When people off-load the contents of their minds into the immediate environment via Post-it notes, piles or other methods of organization, then office policies that require employees to clean off their workstations every night constitute what Haworth's Global Director of Design, Jeff Reuschel, has termed "environmental lobotomies". According to Reuschel, "Environments, like objects, cease to live when treated as containers that are somehow separate or unrelated to the people and objects within them. There is an inherent conflict in an 'environment of separateness' when we concern ourselves only with the physicality of things in space, rather than the relationships between the two. The cognitive and physical elements need to be considered together as a whole."[8]

People often assume that the physical results of what they do are the work — producing spreadsheets or reports and attending meetings — when those are only a pale representation of it. The real task of the knowledge worker is mostly cognitive; invisible until revealed in some type of communication medium. For some workers, it's more productive to keep task-relevant materials and resources at their fingertips for the duration of a project. Christine Reiter, a productivity specialist at Corporate Coaching International in Pasadena CA, suggests" storing the most frequently used materials within easy reach… organized by category and updated at the end of each day."[9] If the items get filed out of sight and forgotten, then they no longer function as memory cues. Lose those mind-extending artifacts, and workers lose the unconsciously embedded cues that familiar environments provide. As a result, we preoccupy ourselves with the most visible — rather than the most valuable — aspects of work.

In the best case, the design of a worker's immediate environment would allow the worker control of how to utilize and organize that space to enhance individual creativity and thinking. Personal control mediates any direct relationship between the design of the environment and its effect on various aspects of job performance. According to Drs. Lee and Brand, a sense of personal control can also reduce some of the disadvantages of distractions in open-plan offices. Rather than a call for messiness, this emphasis on personal choice and control is a recommendation that if some workers prefer to keep their work out in the open, their environments and corporate cultures should support that.

[8] Reuschel, J., & Alexander, B. (1997, Summer). Mindscapes: Creating living environments that extend beyond the physical. IIDA Perspectives , pp. 31-34.
[9] Warnes, K. (2010). Albert Einstein Implies That My Cluttered Desk Shows a Busy Mind. Retrieved from http://www.suite101.com/content/albert-einstein-implies-that mycluttered-desk-shows-a-busymind-a294025

* Additional sources: Cognitive scientists, linguists, physicists, and others interested in the philosophy of the mind whose conjectures may be relevant to the messy-desk issue include: Bernard Baars, David Chalmers, Noam Chomsky, Patricia Churchland, Andy Clark, Terrence Deacon, Daniel Dennett, Jerry Fodor, Michael Gazzaniga, Ray Jackendoff, Stephen Kosslyn, Roger Penrose, Steven Pinker, Daniel Schacter, Alwyn Scott, John Searle, Roger Sperry, and Michael Tye