

# Gen-Y Brains and Workplace Design

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## **Should offices save money or enhance employee performance?**

Two visions still compete for the soul of office design. One vision targets cost savings, and embraces office design as a tool to minimize space and save money. Using math any school child would understand, this vision has launched a thousand spreadsheets showing that indeed putting more people into less space is “cost effective.” Because this “reduction of overhead” (ROO) point of view links easily to the “bottom line,” it was and remains popular with business leaders—particularly those charged with cutting costs. From this orientation, office space functions indirectly as a “business tool” by reducing the subtrahend in the familiar “income-costs=profit” (admittedly simplified) equation.

In contrast to the ROO viewpoint, Bürolandschaft (“landscaped office”) and the subsequent “action office” concept (and many other ideas since) represent the strategic vision for office design (SVO). Largely through the lens of the behavioral and social sciences (and employing much of the language of the currently popular “green building” movement), proponents of this approach view office design as a strategic investment in people—the occupants of office environments. Seen in this way, office space functions as a “business tool” by making people more effective, thus increasing the minuend of the “income-costs=profit” equation just mentioned.

Because the ROO approach welcomed any product that subdivided space (for obvious reasons), this perspective eventually corrupted strategic alternatives in favor of reducing costs by squeezing more people into less space, and with the arrival of pre-wired panels, the cubicle, for better or for worse, was born. Acoustic panels arrived shortly thereafter, and they promised the best of both these visions—space reduction (ROO) AND employee effectiveness (SVO)—through increased “privacy.” Unfortunately, privacy was defined as a product characteristic (NRC; STC) rather than as a dimension of occupant experience<sup>1</sup>. This led to the design of offices that indeed saved lots of money (compared to dry-walled offices), but fell short of their goals for occupant experience—because occupancy quality was rarely rigorously defined or measured.

This attempt to integrate two fundamentally competing visions for office design—to have our cake and eat it too—remains with us today. Additionally, this ambivalent model helps explain the surprising popularity of the cubicle—because it promises to unite the ROO and SVO visions for office design. If we design offices with cubicles, we can presumably save money AND improve employee effectiveness—or so the assumption goes. The cubicle never “caught on” in Europe—not because European office workers didn’t need privacy—but due to

the Quickborner team's proposal that organizational effectiveness could be improved by line-of-sight, two-way interaction between managers and their workers (hence, "landscaped offices"). This presumed association between "more open" office design and improved communication has largely kept the cubicle "at bay" throughout Europe.

### **But Gen-Y can ignore distractions, can't they?**

One of the latest manifestations<sup>2</sup> of this design *non sequitur* (there exist office designs that allow us to reduce costs endlessly yet improve employee effectiveness *at the same time*) involves the assumption that younger workers (whether one begins with Gen-X or Gen-Y) can process information in fundamentally different ways than their older counterparts. We thus do not need to provide privacy in office design, because these up-and-coming prodigies can ignore distractions within more open environments. We are therefore free to concentrate solely on the ROO vision for office design, because the SVO vision now exists safely beyond the confines of office design *per se*, neatly ensconced in the advanced cognitive abilities of the young (see Oommen, Knowles & Zhao, 2008, for a critical review of open-plan work environments for all ages).

Unfortunately, careful laboratory experiments have shown this to be largely a myth, in spite of abundant (and compelling) anecdotal evidence (Anderson, 1993; Glass, Schumacher, Lauber, Zurbriggen, Gmeindl, Kieras, & Meyer, 2000; Laird, Newell & Rosenbloom, 1987; Laughery, 1989; Meyer & Keiras, 1997a; 1997b). Basically, for all age groups of workers, doing two (or more) things at once hurts primary task performance compared to single-task conditions. Certainly task complexity, experience level, strategy differences (e. g., dynamic attention requirements across task subcomponents) and other factors can influence this so-called dual-task performance deficit, but it has been shown to be quite robust across situations and conditions—particularly for difficult (e. g., generative) tasks.

### **Frequency or function?**

Although unaware of any scientific research that decides the issue, I would be willing to accept almost by definition that younger workers differ BEHAVIORALLY from their older counterparts in regard to frequency of multi-tasking; they certainly keep track of many more gadgets than I do, and no doubt they monitor information from all of them—to some level of proficiency (cf. Tapscott, 2009). But this "continuous partial attention," to borrow Linda Stone's marvelous phrase, may have some negative side effects, including lower primary task performance, "techno-brain burnout," and reduced sensitivity to face-to-face social cues (Small & Vorgan, 2008).

Here we must explore some relevant theory. Many years ago, Paivio proposed the "dual coding hypothesis" to explain evidence that linguistic (verbal) cognitive processing differed from imagery-based (nonverbal) processing in a number of

ways, perhaps even involving different brain areas (see Paivio, 2007, for a recent update). Also long ago, Shiffrin & Schneider (1977) wrote some influential papers demonstrating that, at least to a certain extent, such functional distinctions between cognitive tasks depend on learning; they distinguished between “controlled” and “automatic” information processing, arguing that tasks requiring “controlled” processing demanded attention, while tasks involving “automatic” processing did not. (These categories reflect William James’ classic distinction between “voluntary” and “involuntary” attention; to a certain extent, this dichotomy also maps onto control of “novel” or complex tasks and well-learned tasks, respectively.)

## **Serial (sequential) or parallel—processing?**

Why this detour into cognition and attention? Well, this early work highlights current interest in whether the brain consists of a collection of independent modules operating in parallel, or instead features a general-purpose “executive” ruling a hierarchy of operations. If the brain is modular, then presumably it can do many things at once, in parallel, without interference across tasks. However, if it is a general-purpose device, then it basically can only do one thing at a time. An additional controversy involves to what extent practice (experience) with certain activities can alter (change) brain function from the general-purpose executive model to a collection of modules, running in parallel, somewhat unconsciously (cf. Kearney, 2007).

Here’s how this relates to Gen-Y’s presumed enhanced cognitive abilities. Has their greater developmental exposure to a variety of technology (I would be willing to accept this difference without confirmation, but cf. Palfrey & Gasser, 2008) made their brains veritable cities of activities—all operating smoothly and efficiently without interference even between adjacent tasks?

## **Gen-Y may be improving . . .**

The best answers available right now suggest that indeed, if we focus primarily on lower-level (unconscious, well-learned, well-rehearsed) kinds of mental operations, younger people may have learned to divide their attention across several different sources of information (cf. Payne, Peters, Birkmire, Bonto, Anastasi & Wenger, 1994; Schumacher, Seymour, Glass, Fencsik, Lauber, Kieras, & Meyer, 2001). But for complex, unpredictable, demanding tasks (such as often confront “knowledge workers” in an office), their neurocognitive machinery remains subservient to the “bottleneck” of doing only one thing at a time—if high quality (error-free) performance is necessary (cf. Hans Korteling, 1994; Pashler, 1994). Furthermore, distractions interfere with their performance on such complicated, challenging tasks just as they do for older employees. They cannot “learn” to ignore conversations around them any better than their older counterparts. Thus, Gen-Y knowledge workers, at least while working independently, need approximately the same (physical design) conditions as

older employees to excel at their work. They also can't be trusted to talk on a cell phone (or "text-message") while operating a vehicle. The recent (late 2008) Metro-Link accident in California underscores this peril.

So, this latest attempt to reconcile the ROO with the SVO vision for office design based on the presumed cognitive proficiencies of youth remains inadequate. I'll leave the question of how best to balance these conflicting visions for future offices to younger, more ambitious minds; however, I'm tempted to believe mobile/distributed work will figure prominently in eventual solutions—with possible caveats such as "professional isolation" (cf. Cooper & Kurland, 2002; Golden, Veiga & Dino, 2008). Both these studies found evidence that "employee development" can mediate the influence of teleworking on professional isolation, although the second article also found evidence of a "professional isolation"-lower job performance link.

## **Design implications**

Workplaces to enhance knowledge work should continue to support speech privacy for all age groups. Whether such support can best be provided through individual workspace or "floor-plate" strategies remains an interesting empirical question. Additionally, as a proportion of the total floor-plate, workspace strategies supporting communication and collaboration will continue to increase relative to individual workspaces, due primarily to increasingly mobile, distributed, remote work-styles.

<sup>1</sup>Speech privacy can be defined as the inverse of speech intelligibility. Up to 80% redundant, speech (spoken language) is well-learned and processed to the level of semantics (meaning) automatically; thus, neither younger nor older employees can "learn" to ignore speech around them. The physical conditions that provide speech privacy to any arbitrary level within open offices are well-known (Orfield & Brand, 2004), and include absorptive ceilings, sound masking, absorptive floors; absorptive, low-transmitting walls or panels; and low occupant densities. It is meaningless to determine which of these factors contributes "the most" to privacy, because if they're not jointly present, speech privacy is not achieved, due to redundancy levels in the stimulus.

<sup>2</sup>Others include access to daylight, adequacy of "change management" to help people adjust (to more open office environments), and increased communication (i. e., support for collaboration). Typical attempts to integrate ROO and SVO visions for office design argue that the necessity of daylight and/or support for communication require(s) more open office environments (and therefore less privacy). However, if knowledge worker productivity is the goal, there is no substitute for providing speech privacy through the physical design of the office. Nonetheless, Haworth's Ideation Group has collected international evidence that suggests knowledge work is shifting from primarily individual activities to more group-based tasks. Assuming continued confirmation of this trend, the central focus for office design (to support knowledge work) may need to accommodate support for collaboration at some expense to the effectiveness of individual work—but in most cases, design decisions (related to these issues) rely more on intuition and anecdote than scientific evidence (see Brand, 2008, for a review of recent literature).

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[Significant/classic references are noted in the text and listed at the end of this document.]

## **A Cautionary Tale of Generation-Based Design**

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**Research Design Connections**

The Element and The Scion debuted to much fanfare several years ago. Both were designed to be irresistible to Generation Y shoppers. Who actually purchases them? Mostly Baby Boomers. These two families of cars can teach workplace designers an important lesson – good design is generation-blind and apparent to the general market, no matter how it's promoted. Good design is also appropriate for users – both cars and workplaces must meet not only users' functional needs, but their psychological requirements, as well. In addition, these car models teach designers that crafting nonverbal messages is complicated.

## **Introduction**

Human beings of multiple generations have always worked together. At different times in our history, the formative experiences and resulting worldviews of these colleagues have been more or less similar. People from several generations working on the same European farm during the Dark Ages all had, with rare exceptions, similar sorts of childhood experiences. A Renaissance guild master and his apprentice were more likely to have had different sorts of seminal encounters than those Dark Age farmers.

Today's older and younger workers have grown up in worlds more different than these sets of ancestors. These differences in life experiences influence nonverbal messages that employees want workplaces to communicate. We will address the ramifications those differences should have on workplace design.

Sundstrom (1986) has shown the importance of nonverbal workplace communication. As shared spaces, workplaces should present nonverbal information that can be universally and positively interpreted across generations. Multiple generations are present in any workplace environment, regularly with the same professional status, particularly as career changing becomes more common (for example, when retiring Baby Boomers decide to re-enter the work world after retirement via professions that they find "meaningful"). In addition, the highly-involved parents of members of Generation Y help them make major life decisions such as which offers of employment to accept. To the extent that workplace design enters into the job selection decision, parents of one generation will be reading the same environment as their children from another generation.

## **Generations: Similarities and Differences**

### **Common Attitudes Across Generations**

All of the current worker generations share certain attitudes and these similarities are closely tied to ultimate professional performance. The consistent communication of these values throughout any workplace is key.

As Deal reported in a study completed for the Center for Creative Leadership, “The research shows that generations’ values do not differ significantly – individuals of all generations differ much more from each other than any generation does from the others” (2006). The study that Deal conducted indicated that workers of all ages share similar values related to respect and trust, for example.

Research by the Society for Human Resource Management indicates that the same sorts of factors (access to benefits, job security, opportunities to use skills and abilities) contribute to the job satisfactions of all employees, regardless of generation (2008).

### **Levels of Expertise and Workplace Design**

People with different amounts of workplace experience (which often means they are members of different generations) perform different tasks. Generally, people with less experience perform more routine tasks and people with the most experience have managerial responsibilities. Individuals at intermediary levels may have a wide range of duties, depending on their general career track (engineering versus customer service, for example). These differences in job responsibilities have a relationship to effective workplace design.

*Design Implications:* Workplaces and workspaces **must** be designed so that they are appropriate for the work that is done within them, no matter what the generation of the workers involved. Managers need the capability to speak with subordinates and people need vocationally appropriate physical support, for example.

### **Globalization and Generational Cultures**

Generational cultures are becoming more global over time, although national culture still has a stronger influence on worldviews (Egri and Ralston, 2004). It is crucial to recognize this situation when places are being designed: local/national culture has more of an influence on worldview than generational differences do (Hofstede and Hofstede, 2005). As Palfrey and Gasser state in *Born Digital*, “Parallel to their digital universe, Digital Natives [members of Generation Y] are embedded in regional and local customs, habits, and values. These factors, among others – together with the social and economic context and the local laws – are likely to shape the ways in which Digital Natives use digital technology, how they can realize its opportunities, and how they will address the challenges it poses” (2008, p. 13). Rapoport (2005) and Nisbett (2003) have illustrated the important influences of national culture on optimal place design.

*Design Implications:* National (and organizational) culture influence workers’ interactions with their physical environments, and workplace design must recognize those culture specific differences.

## **Stages of Career Development**

Savickas outlines and amplifies Super’s stages of career development (2002; see also Levinson, 1986; Ng and Feldman, 2008). People who change careers will cycle through these stages several times. Until the age of 24, people explore career options that seem consistent (to them) with their vocational self-concepts. During this exploratory phase, they may regularly change jobs. In the process, people learn more about themselves and the world of work. From ages 25 to 44 people find some way to publicly manifest their self-concept – either vocationally or via a hobby, family role, or similar interest. If the manifestation is vocational, people begin to accept additional responsibilities at work.

Around 45, workers may reassess their career, to determine if they wish to continue to pursue it. Individuals then move into a phase of career maintenance that lasts until retirement. Ideally, during this phase, job responsibilities continue to be consistent with an individual’s self-concept and people remain committed to their employer and enhancing their job performance (as opposed to stagnating). This maintenance phase

seems to be less frequent now than it used to be as jobs are continually “redefined” by employers and the psychological contract between employer and employee disappears.

People around 30 years old regularly experience what psychologists call a “quarter-life crisis” (Panchal and Jackson, 2007). This crisis is partially related to career development. At around this time, individuals transition from the discovery period of young adulthood, when people first establish adult jobs and relationships, to thinking about the future, generally becoming more committed to work/career and interpersonal relationships. Thirty year olds review how satisfied they are with their current careers, make appropriate changes, and assess their work-life balance. Individuals older than 30 generally apply all of the information that they have learned about themselves during their earlier periods of self-exploration.

*Design Implications:* At any time in any workplace, individuals exist at different stages of career development. Workers at earlier points may not be as committed to their jobs as workers at later stages – they may still be exploring to determine which career is correct for them. The workplace must help them to focus on the responsibilities of their job. To prevent mature workers from stagnating professionally, the environment should provide information/impetus for professional development.

## **Brain Development After Entering the Workforce**

The human brain is not fully developed until the mid-20s because cognitive-control mechanisms mature long after puberty (Sigelman and Rider, 2009). Since puberty motivates people to engage in thrill-seeking behavior (hormonal changes make people more sensitive to social and emotional stimuli), this developmental gap leads people in their teens and early twenties to do many things that older individuals would not seriously contemplate (Steinberg, 2007). People of this age “Take more risks than children or adults do, as indicated by statistics on automobile crashes, binge drinking, contraceptive use, and crime” (Steinberg, 2007). As Steinberg states, “Unlike logical-reasoning abilities, which appear to be more or less fully developed by age 15, psychosocial capacities that improve decision making and moderate risk taking – such as impulse control, emotion regulation, delay of gratification, and resistance to peer influence –

continue to mature well into young adulthood” (2007). The cognitive-control network is housed in the prefrontal cortex of the brain and it changes in structure and function until the early 20s.

Brain structure also causes young people to think more about some issues than appropriate (Palfrey and Gasser, 2008). This can delay appropriate gut responses (in a classic related study people with less developed brains took longer to indicate that it was a bad idea to light their hair on fire than people with fully developed brains). The same effect is not seen when the topic being discussed is not dangerous.

Palfrey and Gasser (2008) have discussed young people’s undeveloped prefrontal cortex in the context of their difficulty in assessing information quality – this is becoming a more significant issue as material can be posted to the Internet without any sort of editing process. The prefrontal cortex is used in “the selection, interpretation, evaluation, modification, and ordering of semantic information. . . . [young people] are not yet fully hardwired, their ability to select, evaluate, and sort out information is limited compared to the ability they will have once they are fully grown.”

*Design Implications:* Young adults (of any generation) are more open to new experiences (see personality discussion, above) and also more apt to take risks. Members of Generation Y are not any more daring than Baby Boomers were at the same age. Provide workplace/workspace features to compensate for physically immature brains. Don’t create features in workplaces that employees may be dared to jump from, for example, or where they may be cajoled into engaging in risky professional behaviors.

As Macky, Gardner, and Forsyth (2008) state, “Contrary to popular hype concerning generational differences at work, managerial time may be better spent considering employee needs relating to age (maturity), life-cycle and career stage differences than developing generationally specific management policies and practices.”

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