The De-Evolution of Office Design

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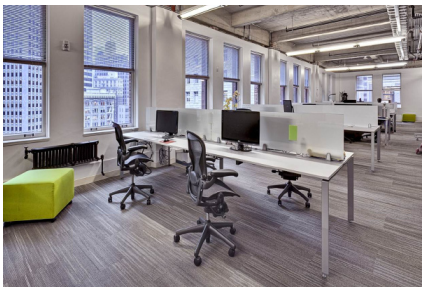
Steve Jobs famously said, "Design is not just what it looks like and feels like. Design is how it works." The current state of office design is not working well.

For more than three decades, the unquenchable thirst for profit by American companies has witnessed a downsizing in workplace real estate. For most organizations, the highest cost of an office workplace has been personnel at 45%-60% of total costs, followed by real estate at 3% - 8%.

At first, office and workstation sizes were reduced slightly. But as telecommuting increased and technology has become smaller and more mobile, the 'workstation' has been reduced again and again to the point where it is most often now just a desk surface - and a small one at that. The images of offices pre-WWII are beginning to reappear, and they are bringing back old issues and yet unaddressed needs. But this time, the needs are not those of entry-level skill people doing just typing or data entry. These are experienced college graduates who are costly personnel to recruit and retain. And the design and management communities are failing to address the physical space needs of these constituents in a responsible manner.



Gensler, the top workplace planning and design firm in the world, surveys its clients regularly. Gensler concludes in an executive summary of their 2013 survey findings: "While the proven connection between collaboration and innovation remains, our research suggests that the strategies often used to achieve it—open workplaces, low- or no-panel desks—aren't hitting the mark. As a result, focus work has been compromised in pursuit of collaboration. Currently neither is working well."

The solutions to the current situation requires a careful case-by-case balancing of the bipolar workplace of open vs. private officing. A summary of current relevant research reflects:

OPEN PLAN POSITIVES

Research into open plan office spaces have shown that by lowering the physical barriers you can:

+ Flatten hierarchies making management more approachable
+ Increase the span of control, reducing the need for middle management
+ Open and simplify channels of communication
+ Remove perceived barriers between staff at all levels
+ Increase cost efficiency through reducing expenditure on furniture and fixtures
+ Increase collaboration and creativity
+ Create a greater sense of team.

OPEN PLAN NEGATIVES

However, the same studies and others have shown that open plan office environments can:

- Increase disruptive, unproductive conversations
- Make 'private chats' difficult to have effectively
- Negatively impact concentration and work quality
- Cause consistent interruptions to work through busy sightlines and noisy acoustic distractions
- Lead to feelings of reduced job satisfaction due to these distractions
- Cause social overstimulation and loss of productivity.

PRIVATE POSITIVES

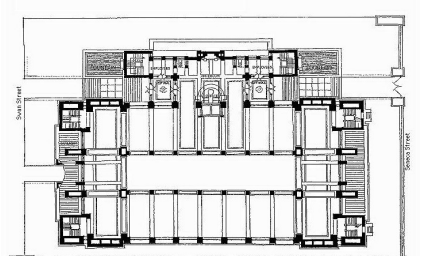
On the other side of the fence, the studies that have looked into private-working environments have found that these type of design can:

+ Be the preferred choice. In several European nations laws were passed to ensure staff had a say in office design and a high proportion asked for a private working environment.
+ Be highly valued
+ Promote feeling of security
+ Reduce noise and distractions from sightlines and the proximity of others
+ Increase job satisfaction as personal space is a high-ranking factor
+ Drastically reduce stray and unproductive conversations.

PRIVATE NEGATIVES

However, these studies found that an office environment that has a greater level of privacy can:

- Present barriers to collaboration
- Promote individualism and introversion
- Create barriers between team, which may negatively impact positive communications
- Cause supervisors to have a perceived diminished degree of approachability
- Create the need for more middle management, reducing the span of control
- Higher cost of furnishing.



The Evolution of Office Design:

Since the dawn of the white-collar age, office designs have cycled through competing demands: openness versus privacy, interaction versus autonomy. Here's a brief history of how seating arrangements have reflected our changing attitudes toward work.

How you work depends in large part on the spaces in which you work.

Nikil Saval in "Cubed: A Secret History of the Workplace," (2014) points out that from the Civil War on, as the white-collar world grew, managers and designers thought out loud about where workers should sit, the furniture they should use, and the walls and windows that should surround them. There was no white-collar class in the modern sense before the late 19th century.

Most offices were small, employing at most a few dozen clerks to service managers and partners; even big factories could be run lean. Offices themselves tended to be intimate and informal spaces, clerks and partners sitting near to, if not next to, one another. Everyone dealt with everything; spoken exchanges rather than paper memos got the work done. This was no happy paradise, as Saval shows in a brilliant analysis based on Herman Melville's story "Bartleby the Scrivener"; rather, it was often an intimate tyranny. What's more, the gulf separating threadbare existence from well-fed prosperity was dramatized in adjoining desks. Still, "the distance between junior clerk and partner was seen as both enormous and easily surmountable."

Saval's book is essentially about what happened when this office got bigger and more organized. As the office became a bureaucracy ruled by the internal division of labor, the American dream faded, though it was still trotted out ceremonially. National railroads and the coal and steel industries led the way in this transformation, requiring hundreds of specialized service workers rather than a handful of all-purpose clerks.

Saval shows how the advent of the telephone and the typewriter aided this transformation, changing the office from a spoken to a written culture: The telephone forced people to keep records of far-flung, impersonal communications; the typewriter enabled them to do so.

Architecturally, growth meant growth upward, since in many of America's expanding cities land to spread out was increasingly scarce and costly. At first, designers had no idea how to organize the interiors of the metal-framed tall buildings that rose up toward the end of the 19th century. Saval suggests that the equally new vertical filing cabinet became a "metaphorical stand-in for the office itself," with each floor in a building stacked up like a separate file.

The time-and-motion engineer Frederick Taylor was the first villain in this organizational effort. He sought to transform office work so that it was as efficient as manual labor in a factory. This translated into regimented work spaces: rows and rows of identical desks in open areas for the lower-level bureaucrats; cubicles nearly identical in form for middle-level functionaries; offices with some personal character for the few at the top. But it was clear by the end of World War II that regimented space could prove self-defeating; by then, the industrial analyst Elton Mayo and others had shown that the neat, filing-cabinet office was literally counterproductive, depressing and demotivating people, and slowing them down.

Saval evocatively describes designs by a very few visionary architects who sought to humanize the workplace. Frank Lloyd Wright's Larkin Administra-

tion Building of 1906, for instance, a light-filled atrium space in Buffalo, was an early effort to do so; Mies van der Rohe's Seagram Building in New York, finished in 1958, is about as beautiful an office environment as High Modernism could imagine. But what was the everyday alternative to routinized space if the designer was not a genius artist-architect backed by an unusually enlightened client? What is the vernacular form of the humane office?

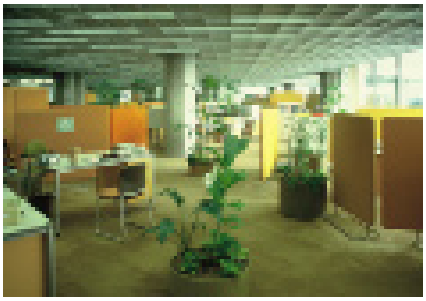
The question is perhaps more complicated now than a half-century ago, because the work of white-collar organizations has been transformed in the last two generations. The corporate ladder on which a person climbs up or down, or at least stands, is gone; in its place is a more flexible organization, which means more short-term, episodic work. For example, white-collar workers changed employers four or five times on average in 1965, whereas today they are very likely to work for more than a dozen firms in the course of a lifetime. Even if they stay within one company for a long time, they are probably going to move erratically as organizations are born, mature, merge or die. It's often said that fixed corporate identity is dead; if so, this means that workers' sense of self-identity is, at the very least, disturbed.

That design might remedy this condition rather than make it worse, confuses Saval — and rightly so. It's an open question about the transforming power of architecture. "Office landscapes" which mix large groups of people have been tried; so, too, the "hot desk" and the "electronic umbilical cord," which allow people to connect to work without a fixed office or work-space. Frank Lloyd Wright's Johnson Wax HQ in 1936 was another open plan exercise, but Wright separated workers in an open plan space with soft diffused daylight and custom-designed desks.

The planners of office campuses like Silicon Valley's Googleplex have created something like the modern company town, mixing labor and leisure, providing gyms and upscale restaurants as well as doctors and day care. The problem with such solutions is in part that the functional amenities bind people to offices for ever-longer periods of the day. From a critical viewpoint, these constitute an architecture of submission.

Saval believes that white-collar workers should resist, somehow, but as he searches for alternatives, he leaves off writing history and becomes a sociologist. His book, he tells us at the very start, is inspired by "White Collar," the great study by the radical sociologist C. Wright Mills from 1951. By the end of "Cubed," what exactly inspired Saval has become clear: It is Mills's worry that white-collar workers are an oppressed class, and also that, because they are resistant to unions and convinced of the American dream, they are passive in their own defense. They may fantasize trashing the office, but they do nothing effective about their rage. Workers, in Saval's view, have to cease thinking like the proverbially conformist, if unhappy, "organization man."

Does office architecture have anything to do with organizing the middle-class? Saval interviews radical office architects like Francis Duffy. He leaves the United States to inspect Dutch experiments in organizing work flow. He is given some crude advice by the design consultant Erik Veldhoen: "You



know Karl Marx? He has to live now." Saval is too sophisticated to swallow this pill, but even so, he finds something attractive in the medicine. Maybe if workers think about how to take control over work space, they will begin to think about how to transform the work itself — but none of the experts Saval interviews quite convince him.

The Evolution of Office Design:

While a book-length effort would be appropriate, a synopsis of the evolution of office design is summarized as follows:

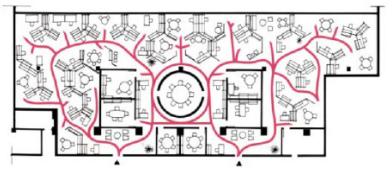
Era 1: Taylorism; 1904-1960:

American mechanical engineer Frederick Taylor was obsessed with efficiency and oversight and is credited as one of the first people to actually design an office space. Taylor crowded workers together in a completely open environment while bosses looked on from private offices, much like on a factory floor. Frank Lloyd Wright's Larkin Building at least made a valiant effort to place everyone close to daylight.

Era 2: Bürolandschaft; 1960 – 1980:

The German "office landscape" (top, left) brought the socialist values of 1950s Europe to the workplace: Management was no longer closeted in executive suites. Local arrangements might vary by function—side-by-side workstations for clerks or pinwheel arrangements for designers, to make chatting easier—but the layout stayed undivided - and open. Speech privacy was addressed by introducing freestanding movable acoustical panels.

Era 3: Action Office; 1968-1980:



Bürolandschaft inspired Harvey Probst at Herman Miller to create a product based on the new European workplace philosophy. Action Office (left) was the first modular business furniture system, with low dividers and flexible work surfaces. It's still in production today and widely used. In fact, you probably know Action by its generic, more sinister name: cubicle.

As AO evolved, the need to deliver power and telephone to staff saw the introduction of the electrified panel where a raceway at the base brought power and phone along a spline, which resulted in a need to feed power and telephone wires to the panels, which became much more linear and repetitive than Probst's original AO concept.

Era 4: Cube Farm: 1980 -

It's the cubicle concept taken to the extreme. As the ranks of middle managers swelled, a new class of employee was created: too important for a mere desk but too junior for an enclosed window seat. Facility managers

accommodated them in the cheapest way possible, with modular panel-based work stations. The sea of cubicles was born.

Organizations loved the ability to reduce area per employee and reduce the number of enclosed private offices, which made reconfiguration quicker and less costly. An unanticipated consequence was that space allocation began to mirror the organizational chart with work station size a product of status, rather than work task or employee needs.

Era 5: Virtual Office: 1994 -

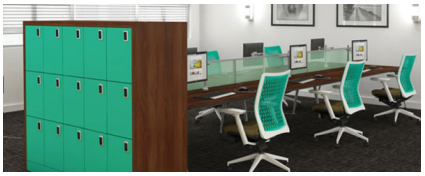
A reaction to the Cubicle Farm was to admit the space allocation based on status was flawed. And with the laptop computer, people were no longer technologically bound to their work station. With management consultants and accounting firms with travelling staffs, real estate costs could be slashed if companies required staff to share space.

Ad agency TBWA\Chiat\Day's LA headquarters was a Frank Gehry masterpiece. But the interior, dreamed up by the company's CEO, was a fiasco. The virtual office had no personal desks; you grabbed a laptop in the morning and scrambled to claim a seat. Productivity nose-dived, and the firm quickly became a laughingstock.

Meanwhile, Silicone Valley start-ups seeking to woo millennials embraced the non-traditional look of the virtual office and experiments with telecommuting, job-sharing and free range working have kept the Virtual Office alive and evolving.

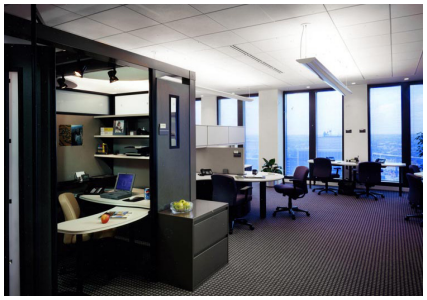
This era also began to reveal experimentation with hoteling - which was rarely done properly - and activity-based planning, both of which represented a certain push-back against the open plan and cubicle-based workplace design paradigm.

Most hoteling experiments reflected the failure of management and the AD community to address the critical issue: what people need to do their jobs. In most instances instead, the space design was an artificial formula of smaller private offices and a certain number of open plan work stations - cubicles - that was a random percentage - 25%-33% of the headcount, that would likely be in attendance on a given day.



In many instances, staff work areas were suddenly reduced to small study carrels like a temporary library space. Staff anxiety about having a place to work was partially relieved in concept by having a 'concierge' function where people could call in or reserve a work station online and support staff would wheel the employee's files from their storage locker to the reserved work station so they would have their files when they arrived.

One of our clients engaged a nationally prominent AD firm to implement new space standards and a hoteling initiative in its Chicago office to lower occupancy costs. The AD firm changed Partner offices from 160 sf to 120 sf



and placed glass storefronts on them all. All staff, regardless of their function or work needs had to reserve a 6′ x 8′ open plan workstation with a 48″ high barrier height that was not acoustic. When those work stations were claimed, staff had to sit at a touch-down shelf area where they could plug in their laptops - barely. The handsome space won design awards - and was a functional and cultural disaster.

Partners who needed to do staff reviews in their offices found that negative reviews behind glass doors were demoralizing for everyone, and they began to rent space off-site for employee reviews. Suddenly, *any* employee review came with extreme negative connotations. Consultants doing heads-down concentration work could not function in the open plan spaces provided and there were not enough stations available for the firm's weekly fly-backs. Meeting spaces were all glass which did not work for training and client project meetings which involved confidential information.

Our design for their Cleveland office started with discussions about the full range of work tasks being performed, staff travel dynamics, office population fluctuations and real estate objectives re. square foot per employee and revenue per square foot. Our design increased Partner offices to 160 sf with partial glass fronts. We included 96 sf offices with glass fronts on the interior of the space for staff managers and consultants to reserve.

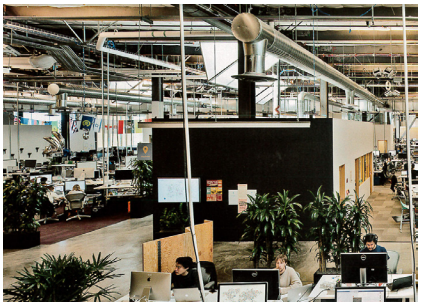
We provided a variety of open plan work stations for collaboration or private work and we provided touch-down areas at the corners of the building with their full-height windows where those who did not need a large work surface area or visual/ acoustical privacy could check e-mails, write memos and have a more social and collaborative work day.

The key to success was getting the proportion of the different work stations right and the provision of 29 Personal Harbor work stations by Steelcase. These 6′ x 8′ enclosed environments can be reserved by staff for heads-down work and are the most requested and most highly utilized space standard of the six provided. It was the largest order ever received by Steelcase for the personal harbors, though they are no longer available. And we exceeded the space and occupancy cost reduction targets from headquarters.

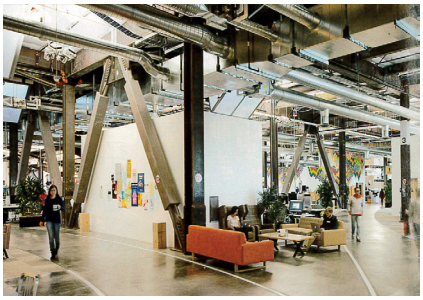
Era 6: Networking: 2006 -

During the past decade, architects, interior designers and furniture designers have tried to part the sea of cubicles and encourage collaboration and sociability—without going nuts. Knoll, for example, created systems with movable, semi-enclosed pods and connected desks whose shape separates work areas in lieu of dividers. Most recently, Vitra unveiled furniture in which privacy is suggested if not realized. Its large tables have low dividers that cordon off personal space but won't guard personal calls. And these networking spaces look identical to the Taylorism rows of desks. But now, designers are taking away carpet and acoustical ceilings, making noise a far more flagrant problem than it was in 1904 when everyone did not have a telephone and a computer with speakers.

Notable projects like offices for Google, Facebook and others champion the open plan desking environments with exposed construction and concrete floors that subject people to serious disruptions and a lack of acoustical and visual privacy that erodes productivity, work quality and employee satisfaction.



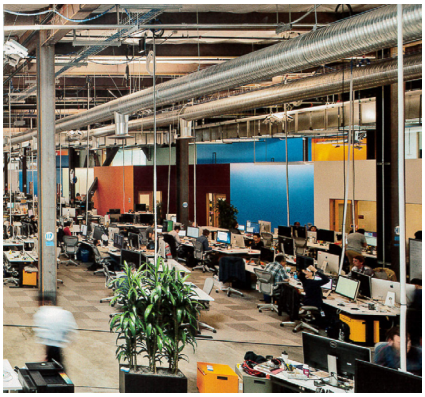
Google and Facebook in particular are legendary for trying to make up for a lack of quality assigned work space with zany amenity areas, coffee, beer and gourmet food.



Changing Demographics and the Lack of Institutional Vibrancy:

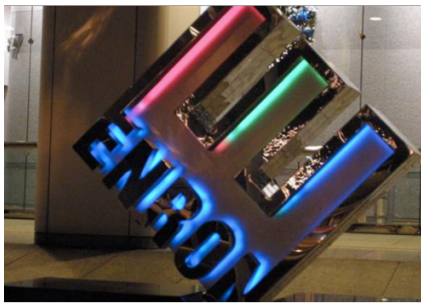
With four generations now in the workplace and Generation Z knocking on the door, 'workplace strategists' are in full denial and pointing us to an updated paradigm for office design. Is Era 6/ Networking a legitimate betterment that enables good work, or is it yet another version of The Emperor's Clothes? If not carefully programmed and crafted, it is the latter.

The level of social change necessary to meet our growing challenges in society – climate change, gun control, race relations, etc. - requires a level of social consensus and institutional vibrancy that we lack right now. So too is consensus lacking on balancing the needs of employees in the planning and design of the workplace. Too often the workplace is now reduced to rows of desks for employees in an open plan with no visual or acoustical privacy and a splash of style thrown at community areas to provide enough 'cool space' to lull employees into ignoring their unmet needs, or simply forcing them to tolerate going elsewhere to get their work done.



Gen X and Gen Y workers in America today have experienced life where virtually every institution in the country has underperformed or failed since 2000:

- In 2000, the US Supreme Court decided the contested Presidential election by a partisan majority and the previously respected institution instructed future readers to not accept their decision as precedent.
- 17 men with box cutters committed the worst mass murder in US history on 9-11-01.
- The largest corporate bankruptcy in US History – Enron – took place in December 2002.
- The War in Iraq cost over 4500 US lives, 250,000 – 500,000 Iraqi lives and cost US taxpayers $2T - $3T.
- New Orleans drowned on live television with over 1000 lives lost due to Hurricane Katrina and inept government.
- The largest financial meltdown in US history costing over $7T occurred in 2008 - and none of the parties who caused the crisis have been held responsible.
- The Catholic Church has been peppered with sexual predator claims and massive settlement costs, revealing that for decades, the church proved unable to separate the predators from the victims.
- Congress has the lowest approval rating – 11% - ever.



- In 2010, the partisan US Supreme Court ruled that all independent expenditures of corporations and unions violated the First Amendment of free speech, and that because the First Amendment did not distinguish between media and other corporations, previous restrictions improperly allowed Congress to suppress political speech in newspapers, books, television and blogs.
- In 2012, the Sandy Hook Elementary School shooting killed 28. Random shootings in schools, theatres and malls across the country continue.
- Police across the country continue to use deadly force against unarmed citizens, particularly minorities, with little or no accountability.

As a result, young people today justifiably have a high level of institutional distrust and have come to accept the inequality of accountability. Our younger generations do not have a set of values steeped in an appreciation for the inherent value and benefit of a meritocracy where achievement determines status and success. Yet our younger generations want to be esteemed for their good work. However, we place them in an environment of distraction that requires multitasking, which guarantees performance deficiencies.

Today, children's sports teams do not keep score and every participant gets a trophy, signaling a de-valuing of the risk-reward paradigm of sports. The understanding of 'success' seems to only appear in the $100 million+ multi-year contracts pro sports athletes are granted when they hit free agency during their prime. Plus the lucrative endorsement deals if they manage to steer clear of doping, felonies and homicides.

Our omnivorous media and its boundless appetite or scandal and salacious content fail to fact check and present legitimate facts and news, delivering instead quasi-entertainment. Even ESPN and the major networks have succumbed to the Fox-bred paradigm of young attractive female anchors in skirts standing delivering 'news' so we can see their legs.

Elites in America used to be determined by meritocracy – a system by which achievement and demonstrated ability are rewarded and those who excel are elevated.

Elites used to get more space, better space where quality, visual and acoustical privacy increased with achievement. If you applied yourself, you got a perimeter office, a bigger office and eventually, the corner office. That all began to change 20 years ago.

Lack of institutional vibrancy, the lack of meritocracy and an economy that is far from robust in many markets has employees accepting the sub-standard work environments being provided today.

Visual and acoustical privacy needs are met at home, Starbucks, the park or restaurant rather than the office.

Many office designs today are more about branding, having a stasis point and meeting some group needs, than providing the setting for high performance work of high quality for all.

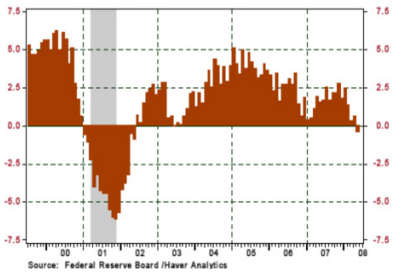
Cause and Effect:

The lack of institutional vibrancy in America has also been reinforced by government ineptitude and inaction with repeated political head butting, particularly from 2008-2016, as well as a recurring pattern of economic recessions.

The 1980-1982 recession was caused by the Iranian oil embargo and the Federal Reserve Bank's raising interest rates to combat inflation, which reduced business spending. GDP was negative for six of the 12 quarters and unemployment hit 10.2% in late 1982. Reagan responded by increasing defense spending and putting a tax cut in place.

The savings and loan crisis caused the 1990-1991 recession, and businesses became less confident. Most began looking earnestly for flexibility to control occupancy costs. Our clients responded by embracing new smaller space standards, attempting to reduce their footprints and negotiating flexibility to expand or contract space as business fluctuated.

The 2001 recession was caused by the Y2K scare, the boom and bust in Internet business, and was aggravated by the 9/11 attacks. Travel and entertainment spending tanked and virtually every business started embracing smaller space standards, hoteling and short-term leases on space and FF+E (fixtures, furnishings and equipment).

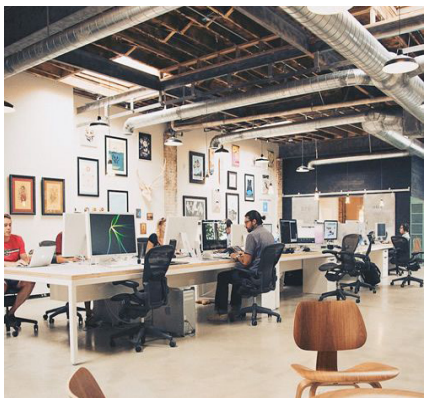


The 2008-2009 Recession was the worst since the 1929 Depression and was triggered by the Subprime Mortgage Crisis, which created a global banking credit crisis. The economy tanked by 5%-8% four quarters in a row until the GDP turned positive thanks to a $700B bank bailout and a $700B economic stimulus package. Failed institutions included Bear Stearns, Fannie Mae, Freddie Mac, Lehman Brothers, Citi Bank and AIG.

The cyclical nature of this instability in the US economy and incessant pressure from Wall Street and shareholders for increased profit lead many businesses to adopt even smaller downsized space standards to further reduce occupancy costs. These standards were typically arbitrary and bore no real resemblance to an understanding of the physical space needs of people in their jobs. Hoteling was popular for a brief period but was largely a flop because the design community failed to properly design for it.

The Nature of Work and the Open Plan Dilemma:

Privacy-challenged office workers may find it hard to believe, but open-plan offices and cubicles were invented by architects and designers who were trying to make the world a better place—who thought that to break down the social walls that divide people, you had to break down the real walls, too.



In the early 20th century, modernist architects saw walls and rooms as downright fascist. The spaciousness and flexibility of an open plan, we thought, would liberate homeowners and office dwellers from the confines of boxes. But companies took up their idea less out of a democratic ideology than a desire to pack in as many workers as they could. The typical open-plan office of the first half of the 20th century contained long rows of desks occupied by clerks in a white-collar assembly line.

Cubicles were interior designers' attempt to put some soul back in. In the 1950's, Quickborner, a German design group, broke up the rows of desks into more organic groupings with partial-height partitions for privacy—what it called the Bürolandschaft, or "office landscape". In 1964, the American furniture company Herman Miller introduced the Action Office system, which offered improvements - larger surfaces and multiple desk heights. In 1968, Herman Miller began to sell its system as modular components, with the unfortunate consequence of letting companies cherry-pick the space-saving aspects of these designs and leave out the humanizing touches.

As corporations began to shift all their employees, not only clerks, into open-plan offices, Herman Miller designer Robert Probst disavowed what he had spawned, calling it "monolithic insanity." Today, many companies are even reverting to the pre-cubicle rows of desks, now called "pods" or just "desking" to make them sound vaguely futuristic or at least different.

Although open plans do have advantages in fostering ambient awareness and teamwork, a meta-analysis published last year in the Asia-Pacific Journal of Health Management by Vinesh Oommen of the Queensland University of Technology in Australia found that they cause conflict, high blood pressure and increased staff turnover.

Technology has changed the means and nature of office work for most from the time when open office environments were first developed. Scanners and software have eliminated the routine processing and data entry tasks of the 1960's and 1970's. So people work generally involves cognitive and analytical and/or creative thinking – reviewing, processing, absorbing and interpreting information and formatting information for understanding and interpretation by others.

And while the popular press has been overrun with articles pointing out the inadequacies of the open plan workplace, the design community has been doubling down on an open plan workplace model that is even worse than that being put in place in the 1960's with no visual or acoustical barriers. At least those environments had acoustical ceilings and carpeted floors to help absorb sound energy.

The supposed justification for this return to "desking" as a workplace setting is that it fosters collaboration. In reality, what it fosters is interruption and distraction. In the 1980's and 1990's, the great debate was how to house software developers since there was so much coding going on. Tom DeMarco and Tim Lister wrote the most comprehensive book on the subject (Peo-

pleware-Productive Projects and Teams, 1987), which explored the social and economic impacts of failing to provide settings that met the essential needs of people in the workplace. They used real life examples to identify "flow" and how long it takes to get back into it once you are disrupted out of it (15 minutes). The book's section on the planning and design of office environments offers some real data on the effects of the environment on "intellect workers."

Figures from DeMarco and Lister's coding war games showed a high correlation between productivity and the amount of privacy and space given to programmers. Other factors such as salary level, years of experience and development platform prove far less influential on productivity.

DeMarco and Lister discuss the importance of the psychological state of "flow", that near-meditative state of deep involvement in a task. Flow increases creativity and personal satisfaction. Prolonged periods without interruption are desirable because it takes at least fifteen minutes to return to flow after an interruption. According to researchers, flow is almost impossible to achieve in an open plan environment.

Peopleware offers a strong argument against open plan offices. DeMarco and Lister note that proponents of the open plan model have never produced evidence that open plan offices are more productive.

"The people who brought us open-plan seating simply weren't up to the task. But they talked a good game. They sidestepped the issue of whether productivity might go down by asserting very loudly that the new office arrangement would cause productivity to go up, and up a lot, by as much as three hundred percent. … The only method we have ever seen used to confirm claims that the open plan improves productivity is proof by repeated assertion."– Peopleware pp 52-3.

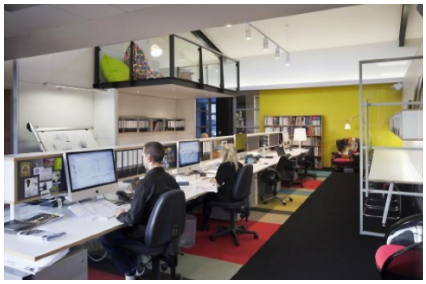
"People under pressure don't work better. They just work faster."

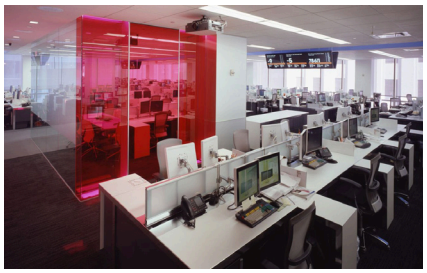
Open Plan Backlash:

Like most trends before it, open offices are experiencing a bit of a backlash. Once considered a signpost of innovation and collaboration, these office layouts—which eschew architectural dividers, rows of cubicles – or just rows of desks - and private offices for seating plans without walls—have come under fire in blog posts, think pieces, productivity research and chat conversations. It's a backlash so pervasive, some business owners are wondering what to do about their put-upon employees.

"The open-office movement is like some gigantic experiment in willful delusion," Jason Feifer of Fast Company wrote recently in an annoyed screed calling for offices for all. "Maybe we can spend less on space, the logic seems to go, and convince employees that it's helping them."

In a New Yorker piece called "The Open-Office Trap," Maria Konnikova





reports on data point after data point detailing how far the open office has fallen out of favor with employees. The sound of fellow employees doesn't foster a can-do spirit, but a get-me-out-of-here reaction.

In a study conducted by Cornell University psychologists, "clerical workers who were exposed to open-office noise for three hours had increased levels of epinephrine—a hormone that we often call adrenaline, associated with the so-called flight-or-flight response," Konnikova wrote. "What's more … people in noisy environments made fewer ergonomic adjustments than they would in private, causing increased physical strain."

Along with being bad for your back, "workers in two-person offices took an average of 50 percent more sick leave than those in single offices, while those who worked in fully open offices were out an average of 62 percent more," Konnikova wrote.

Besides the health consequences, research from the University of Sydney found that "the loss of productivity due to noise distraction … was doubled in open-plan offices compared to private offices, and the tasks requiring complex verbal process were more likely to be disturbed than relatively simple or routine tasks," the Harvard Business Review reported.

"Currently, only one in four U.S. workers are in optimal workplace environments," states the 2013 Workplace Survey from Gensler, an integrated design company. "The rest are struggling to work effectively, resulting in lost productivity, innovation and worker engagement."

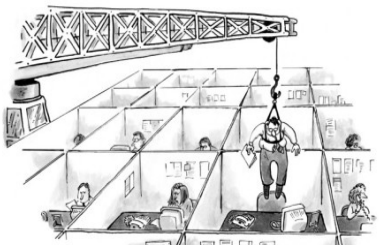
With 70 percent of American employees now working in an open-office environment, that's a lot of stressed out workers with poor posture and reduced effectiveness.

In her Washington Post article, "Google got it wrong (top 3 images at left). The open-office-trend is destroying the workplace," Lindsey Kaufman observes that 70& of US offices have low or no interior partitions according to IFMA, and credits Silicone Valley as the leader, though this could be debated with banks and insurance companies out of the blocks before there was a Silicone Valley.

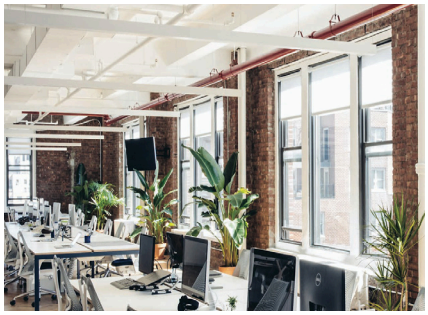
Facebook CEO Mark Zuckerberg had Frank Gehry design the largest open plan environment in the world for 3000 of his employees. Michael Bloomberg drank the Kool-Aid, saying it promoted transparency and fairness. If there is a primary benefit to open plan environments, it minimizes cost to construct and reduces occupancy costs by requiring less space to house the organization. Kaufman notes that bosses love being able to keep a closer eye on employees, "ensuring clandestine porn-watching, constant social media browsing and unlimited personal cellphone use isn't occupying billable hours.

But employees are getting a false sense of improved productivity. A 2013 study (de Dear, Kim) found that many workers in open offices are frustrated by distractions that led to poorer work performance. Nearly half of the sur-

veyed workers in open offices said the lack of sound privacy was a significant problem for them and more than 30 percent complained about the lack of visual privacy. Meanwhile, "ease of interaction" with colleagues – the problem that open offices profess to fix – was cited as a problem by fewer than 10 percent of workers in any type of office setting. In fact, those with private offices were least likely to identify their ability to communicate with colleagues as an issue. In a previous study, researchers concluded that "the loss of productivity due to noise distraction… was doubled in open-plan offices compared to private offices.""



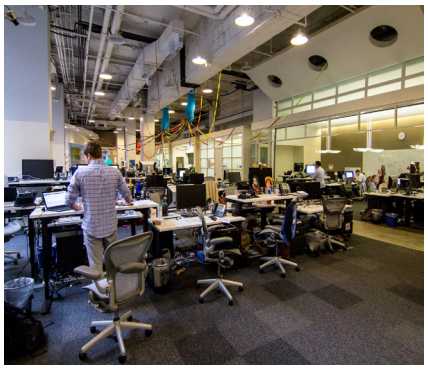
Kaufman also approached the issue personally; "A year ago, my boss announced that our large New York ad agency would be moving to an open office. After nine years as a senior writer, I was forced to trade in my private office for a seat at a long, shared table. It felt like my boss had ripped off my clothes and left me standing in my skivvies."



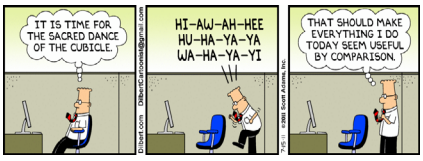
"Or new modern Tribecca office was beautifully airy, and yet remarkably oppressive. Nothing was private. On the first day, I took my seat at the table assigned to our creature department, next to a nice woman who I suspect was an air horn in a former life. All day, there was constant shuffling, yelling and laughing, along with loud music piped through a PA system. As an excessive water drinker, I feared my co-workers were tallying my frequent bathroom trips. At day's end, I bid adieu to the 12 pairs of eyes I felt judging my 5:04 p.m. departure time. I beelined to the Beats store to purchase their best noise-cancelling headphones in an unmistakably visible neon blue."

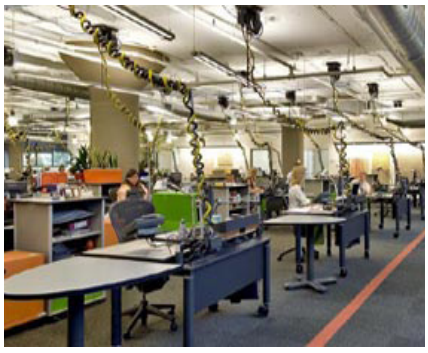
Kaufman does admit that the open plan has produced a new kind of organic solidarity: "I've formed interesting, unexpected bonds with my cohorts. But my personal performance at work has hit an all-time low. Each day, my associates and I are seated at a table staring at each other, having an ongoing 12-person conversation from 9 a.m. to 5 p.m. It's like being in middle school with a bunch of adults. Those who have worked in private offices for decades have proven to be the most vociferous and rowdy. They haven't had to consider how their loud habits affect others, so they shout ideas at each other across the table and rehash jokes of yore. As a result, I can only work effectively during times when no one else is around, or if I isolate myself in one of the small, constantly sought-after, glass-windowed meeting rooms around the perimeter."

A recent study featured in the December 2013 issue of the Journal of Environmental Psychology found that employees who work in open-plan office layouts—where employees' workstations and desks are in large open spaces rather than in private offices—are least happy with their office environment. The researchers surveyed 42,000 U.S. office workers in 303 office buildings on their satisfaction level with their office environment on seven different attributes, including room temperature, privacy, ease of interaction and overall sentiments. Two-thirds of those surveyed worked in offices with open-plan layouts, while one-quarter worked in private offices and a small fraction shared a single room with co-workers.



The study found that workers in open-plan offices—even those with parti-





tions to help create some feelings of privacy—were very dissatisfied with the sound privacy in their office. Partitions probably hinder privacy, the authors note, because "visual screens make ambient noise harder to predict and feel less controllable," according to a summary of the study by the British Psychological Society.

Overall, the researchers found that people who worked in private offices were most satisfied with their workspace.

"The most powerful individual factor, in terms of its association with workers' overall satisfaction levels, was 'amount of space,'" the British Psychological Society notes. "Other factors varied in their association with overall satisfaction depending on the different office layouts. Noise was more strongly associated with overall satisfaction for open-plan office workers whereas light and ease of interaction were more strongly associated with overall satisfaction for workers in private offices."

The study's authors note that their research builds on a growing body of research that shows that open-plan office layouts aren't nearly as beneficial as originally believed. In fact, research has shown that open layouts actually deter employees from communicating due to the lack of privacy.

"The open-plan proponents' argument that open-plan improves morale and productivity appears to have no basis in the research literature," the authors write.

The Best Intentions

Around half a century in the making, open offices weren't always so hated. The original idea from Hamburg, Germany, in the 1950s, was an attempt "to facilitate communication and idea flow." But the steno pool gave way to the windowless "cubicle farms" that were parodied in the 1990s movie Office Space and comic strip "Dilbert." Offices reflected an organization's hierarchy, with top brass cloistered off in offices with doors and privacy and everyone else toiling away in those cramped, fabric-covered boxes. And the 1950's concept began to catch on again as technology advanced and America's economy became more knowledge-based.

In 1997, a large oil and gas company in western Canada asked a group of psychologists at the University of Calgary to monitor workers as they transitioned from a traditional office arrangement to an open one. The psychologists assessed the employees' satisfaction with their surroundings, as well as their stress level, job performance, and interpersonal relationships before the transition, four weeks after the transition, and, finally, six months afterward. The employees suffered according to every measure: the new space was disruptive, stressful, and cumbersome, and, instead of feeling closer, coworkers felt distant, dissatisfied, and resentful. Productivity fell.

In 2011, the organizational psychologist Matthew Davis reviewed more than a hundred studies about office environments. He found that, though open

offices often fostered a symbolic sense of organizational mission, making employees feel like part of a more laid-back, innovative enterprise, they were damaging to the workers' attention spans, productivity, creative thinking, and satisfaction. Compared with standard offices, employees experienced more uncontrolled interactions, higher levels of stress, and lower levels of concentration and motivation. When David Craig surveyed 38,000 workers, he found that interruptions by colleagues were detrimental to productivity, and that the more senior the employee, the worse they fared.

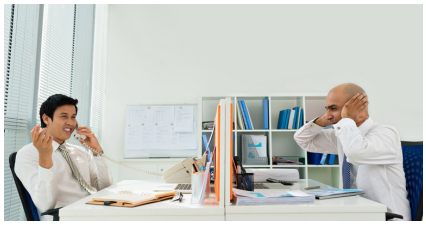
Noise and Speech Privacy:

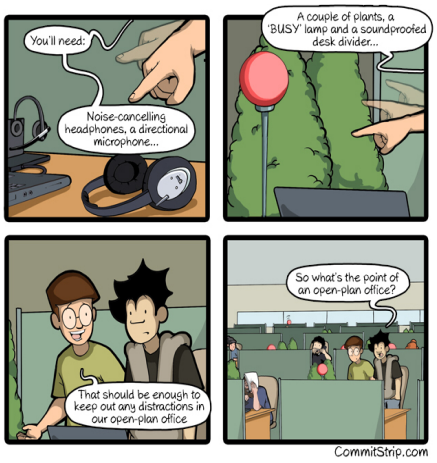
Architects, Interior Designers and manufacturers of open plan contract furniture products have for decades failed to effectively address noise in the open plan office and speech privacy. We convinced ourselves that medium density fiberglass behind fabric-covered panels that absorbed 80% of the sound energy that hit the surface was good enough. But density, orientation and panel height are all key factors in absorbing sound. Taller panels absorbed more sound and pushed what was not absorbed up to a ceiling that was usually highly absorptive. But taller panels made people feel claustrophobic and circumvented air movement and thermal comfort. Panels below 66″ are much less effective because the speech privacy plane in an office environment is 66″ above the floor.

The fundamental concept of speech privacy is if you can hear someone speaking near you, but cannot discern what is being said, your productivity will not be disrupted. Our firm early on jumped on the sound masking system bandwagon for this reason. We specified central modular sound masking systems above the ceiling in our projects in pump ambient sound energy into spaces where we could control the frequency and volume so that staff in office and the open plan could concentrate. Fortunately, computer keyboard strokes and the human voice are the same frequency, so controlling the lower octave band energy in spaces enabled our clients to achieve relative speech privacy. Sound masking systems sound like a whoosh from the HVAC system.

In laboratory settings, noise has been repeatedly linked to reduced cognitive performance. The psychologist Nick Perham, who studies the effects of sound on how we think, has found that office commotion impairs workers' ability to recall information, and even to do basic arithmetic. Listening to music to block out the office intrusion doesn't help: even that, Perham found, impairs our mental acuity.

Exposure to noise in an office may also take a toll on the health of employees. In a study by Cornell University psychologists Gary Evans and Dana Johnson, clerical workers who were exposed to open-office noise for three hours had increased levels of epinephrine—a hormone that we often call adrenaline, associated with the so-called fight-or-flight response. What's more, Evans and Johnson discovered that people in noisy environments made fewer ergonomic adjustments than they would in private, causing increased physical strain. The subjects subsequently attempted to solve fewer puzzles than they had after working in a quiet environment; in other words, they





became less motivated and less creative.

Demographics and Noise:

Open offices may seem better suited to younger workers, many of whom have been multitasking for the majority of their short careers. When Heidi Rasila and Peggie Rothe (2012) looked at how employees of a Finnish telecommunications company born after 1982 reacted to the negative effects of open-office plans, they noted that young employees found certain types of noises, such as conversations and laughter, just as distracting as their older counterparts did. The younger workers also disparaged their lack of privacy and an inability to control their environment. But they believed that the trade-offs were ultimately worth it, because the open space resulted in a sense of camaraderie; they valued the time spent socializing with coworkers, whom they often saw as friends.

That increased satisfaction, however, may merely mask the fact that younger workers also suffer in open offices. Psychologists Alena Maher and Courtney von Hippel (2005) found that the better you are at screening out distractions, the more effectively you work in an open office.

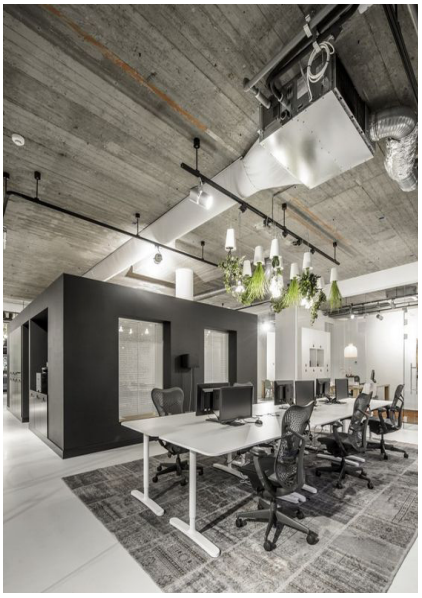
Unfortunately, the more frantically you multitask, the worse you become at blocking out distractions. Moreover, according to the Stanford University cognitive neuroscientist Anthony Wagner, heavy multitaskers are not only "more susceptible to interference from irrelevant environmental stimuli"

but also worse at switching between unrelated tasks. In other words, when habitual multitaskers are interrupted by a colleague, it takes them longer to settle back into what they were doing. Regardless of age, when we're exposed to too many inputs at once - a computer screen, music, a colleague's conversation, the ping of an instant message - our senses become overloaded, and it requires more work to achieve the intended result.

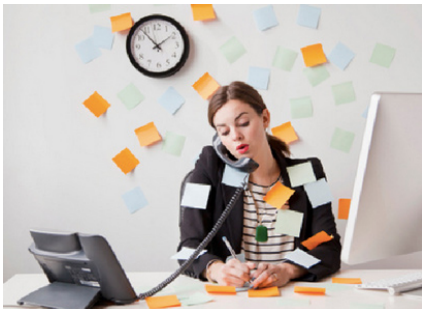
Gen X, Gen Y and Gen Z have grown up with the news ticker at the bottom of the screen, MTV and YouTube. They are used to multiple simultaneous inputs and stimuli. That does not however correlate to necessarily being able to manage them more effectively and produce quality outcomes.

Melinda Zetlin, co-author of The Geek Gap, notes that research indicates

that constant multitasking is damaging millennial brains. Neuroscientists, psychologists, and efficiency experts have been telling the world for years that multitasking makes us less productive since the brain can't actually pay attention to more than one thing at a time. What we experience as multitasking is really rapid and repeated switching of our attention from one thing to another and the back again. And though it feels good, it means each task is completed more slowly and less effectively than if you just did one thing at a time – Millennials too.



Researchers at Bryan College have prepared a compelling infographic that details the high costs of millennial multitasking. The average Millennial switches his or her attention among media platforms 27 times per hour. This is bad because studies have shown that multitasking can lower your IQ by 15 points. It trashes your emotional intelligence as well, which isn't surprising--if you're switching your gaze from your laptop to your smartphone to a TV screen and back again, you stand to miss a lot of subtle nonverbal signals from the person you're simultaneously talking or the media you are interacting with.



Performing a mental task while multitasking yields similar results to performing the same task if you got no sleep the previous night, research shows. And it gets worse. Prolonged multitasking will actually damage your brain. Regular multitaskers have less brain density in areas controlling cognitive and emotional functions. The Bryan study concluded that the lack of productivity due to multitasking represents a loss of $30.5B in the US and $450B globally.

You wouldn't think smart employers would want the young people working for them to be emotionally unintelligent, 40 percent less efficient, more stupid, less attentive, or ultimately brain-damaged. And yet, most employers seem eager to hire multitasking employees. And put them in an open office environment that guarantees distractions and requires constant attempts at multitasking. "The ability to multitask is a skill you will see posted on countless job openings across the globe. Many business leaders view this as a highly desirable skill in a job candidate," according to a Bryan College representative.

Though multitasking millennials seem to be more open to distraction as a workplace norm, their wholehearted embrace of open offices may be ingraining a cycle of underperformance in their generation: they enjoy, build, and proselytize for open offices, but may also suffer the most from them in the long run.

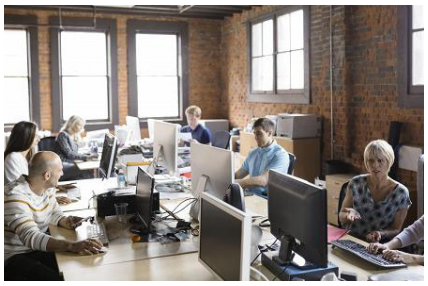
Acoustic Privacy = The Number One Complaint:

A lack of acoustic privacy is understood as a real concern in hospitals, banks, law offices governmental and military facilities. But the state of office design today in many instances ignores user needs for acoustical privacy, particularly impacts on 'the involuntary listener.'

The inadvertent conversation naturally makes people self-conscious about privacy, creating a sense of being ill at ease, and impacting one' ability to freely communicate. A decade long study of 65,000 people by the Center for the Built Environment at the University of California Berkley found that the lack of speech privacy is the number one complaint in offices (Moeller, 2016). Overhearing in-person and telephone conversations causes "irritation." That conscious irritation disrupts concentration and negatively impacts work quality and productivity. Employees waste an average of 21 minutes each day due to unwanted sound distractions (Betz, 2016).

The degree of negative impact increases when the problem moves from hearing someone speaking to being able to understand what is saying. Achieving acceptable levels of speech intelligibility in an office setting can be challenging because the redundancies and patterns in speech enable us to understand what is being said even if we only hear half of the conversation. Private details can be exposed even if we only hear a small part of a conversation.

Bell Labs created the Articulation Index in 1921 to quantify speech quality and comprehension over telephone lines. A more recent metric is the Privacy Index, based on the AI, expressed as a percentage. Both can be misleading in determining what percentage of audible sound can be understood based on the ratings.



Sound follows both direct path and reflected paths, bouncing of furniture, floors, walls and ceilings. It can also follow diffracted paths, bending around objects and people, though less significant.

Achieving acoustical privacy entails simple ABC's: Absorb, Block and Cover. When sounds hit surfaces, they are reflected back into the space. Hard materials – glass, concrete, metal, plastic laminates, wood – make the reflected sound energy high and overall volumes rise. The high percentage of hard surfaces we see in so many open plan offices today also increases reverberation, making work uncomfortable. Controlling this type of sound energy requires absorption wherever possible – floors, walls, ceilings, and furniture. Ceilings are usually the largest unimpeded surface in an office space, and while comparatively inexpensive - $3 - $6/sf, they should provide the most absorptive material available to the budget. Suspended ceiling systems typically absorb 85% - 95% of the sound energy that reaches them.

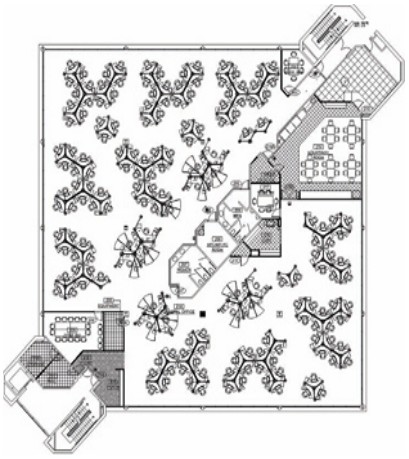
Blocking involves using walls, windows, doors and other physical structures to inhibit speech/ noise transmission. If there are no barriers between occupants, speech travels easily and the ability to see reduces privacy due to our natural ability for lip reading.

Acousticians state that in open plan environments where speech privacy is desirable, absorptive barriers between workstations should be no lower than seated head height, or 60" – 65" (Moeller, 2016). It is also recommended that the direction a person faces affects their voice's volume in the neighboring spaces, so people should be seated facing away from one another whenever possible.

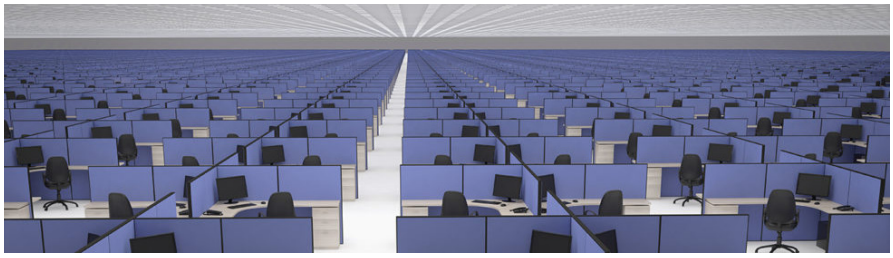
Sound masking systems are naturally very useful as previously noted, and should be included in any open plan environment, preferably with the ability to tune frequency and volume/ amplitude of the ambient sound energy being introduced.

No More Room to Take Out:

When economic instability and profit pressures reached executives when they were looking for reduced costs and more flexibility with their occupancy costs, and human resource professionals were starting to observe that prospective employees seemed more interested in the work environment provided, design professionals were only too happy to try a paradigm shift.



"Office architecture, long taken for granted, is badly in need of radical redesign," a 1993 report read. "The object of the new office is to attract and

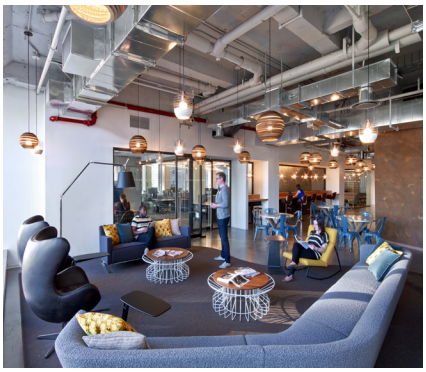


retain brilliant staff, to stimulate their creativity, and to multiply organizational productivity. In order to do this ... life must be breathed into how we approach office design." "Management gurus," as a past Business Week article referred to these office space innovators, called for more interaction, more collaboration and more shared spaces.

The open-office revolution came swiftly—walls were razed, cubicles collapsed and light streamed in, first in dotcom offices and then in places trying to capitalize on that air of innovation.

"Another reason behind that was to create a bit more of an egalitarian space and bring some parity in the workplace to dismantle the hierarchical structures," says Nicole Coughlin, a spokeswoman for office furniture maker Knoll. Opening up offices also helped with "sustainability efforts to bring natural light in and make people feel better about their work environment," she adds.

Large desktop computer processing units with large computer monitors gave way to flat screens, so 30" work surfaces shrunk. Huge desktops in single offices gave way to light laptops on long tables. And it wasn't just for the sake of increasing collaboration—a business owner can't ignore the cost-benefit of these open spaces. A Bloomberg Business Week article reported that at NEAD App Development instead of leasing a cramped office for $30 per square foot per year, the CEO got hip industrial space at $8.28



square foot per year.

The non-traditional spaces make businesses more appealing to younger employees and company's end up with a freshened brand identity. And the flexibility to reconfigure when business needs evolve without costly reconstruction and its accompanying disruption makes everyone's life easier – nor so it seems.

But as the open-office option became more popular with business owners, employers began to feel the squeeze. "I think over time, the densification that we've seen happen in the open-office environment had just gotten out of control," says Sonya Dufner, principal and director of workplace strategy for Gensler's New York office. "People densified until they can't densify any more."

And the bar keeps getting lower: "From 2010 to 2012, the average square foot per person dropped from 225 to 176," the Gensler workplace survey states. "This number is predicted to drop to as low as 100 square foot per person by 2017." In 2000, the average square foot per person was 296.

The economics of space are why open offices are probably here to stay, at least for the foreseeable future, Dufner says. "[Business owners] know they need flexibility to accommodate change," she explains. "They know they're going to change as an organization, [but] they can't really tell us how because things are happening so fast."

Flexibility is also important in shaping an open-office experience that benefits both the employee and the employer. "Businesses that offer autonomy and choice [to their employees] grow four times faster than the rate of firms that didn't," says Dufner of Gensler. "Doing this really does help your business grow."

"People feel more connected to a workplace where they have the ability to shape their work environment and decide when and where they're going to work," says Coughlin of Knoll. That freedom increased the likelihood that people would report being happy with their job by 12 percent and increased overall job performance. This sort of mutual satisfaction can be found within the four walls of an open office. First, employers have to understand how the office can support and inhibit their workers' productivity. Then, empowered by that knowledge, they can and should reevaluate how the office is being used and make appropriate changes.

Meeting Essential Needs:

According to Gensler's research, we enter in and out of four different work modes throughout the day: focus (the type of work that demands one's full attention), collaborate, learn and socialize. Open offices were meant to foster collaboration, and that's something—despite the attendant annoyances—people still want to experience on the job. While "the average employee does want fewer distractions, they also want 35 percent more frequent

interactions within their teams; they want more energy and buzz in the workplace than less," wrote David Craig, a senior vice president at CannonDesign in New York.

Even so, collaboration isn't happening as often as open offices were planned for: It dropped by 20 percent between 2008 and 2013, while time spent focusing has increased by 13 percent, according to the Gensler survey. What frustrates most employees is when collaborating, socializing and learning happen in spaces designated for focusing. "We only spend 50 percent of our time in our primary work stations," says Knoll's Coughlin. "It's important to create different user experiences so someone can pick and choose what kind of environment they want to have throughout their day." She suggests zoning off open-office areas that indulge these five different types of interactions:

Refuge: "These are spaces for one or two people when they need quiet time or have a confidential conversation," Knoll explains. "It provides visual and acoustic privacy." Phone booths are a popular refuge space solution.

The refuge rooms have specific functions. Some rooms are ideal for taking conference calls, while others are intentionally technology free, for interviews or meetings where technology is unnecessary and potentially distracting. Other spaces are great for small meetings between coworkers, outfitted with a table and screen to share.

"We also have a couple of refuge spaces for more private use, such as a mother's room and a web conference work room with full privacy doors," explains Coughlin, "and sprinkled throughout the space are open refuge spaces, where the furniture itself gives a sense of enclosure and privacy."

Enclave: "Enclave spaces are for three to four people to quickly get together and have a meeting on the fly," Knoll says, "but they do it in a way that won't interrupt the focus work that people are doing around them. It has a little bit of visual and acoustic separation so they're not disturbing others."

Team-meeting Space: This space should be able to hold up to eight people, and can either be dedicated to a specific team that meets frequently (i.e., your tech guys), or be booked in advanced. These spaces should be set up with the proper technology to conduct business, and also a number of outlet options to charge up so work can get done. "That will allow them to connect with teams—to work virtually and collaboratively," says Gensler's Dufner.

Assembly: Usually a space seen in larger companies, these are bigger conference areas used to promote "connectedness to the organization," through all-hands meetings and the like, Knoll says. These spaces probably already exist in your company as the conference room with traditional trappings—a large table surrounded by swivel chairs, a credenza, tech wall, etc. But make the space feel more relaxing by taking out the formal furniture and bringing in some decorative elements for an informal feel.

Community: These spaces are mainly for socializing, Knoll says. "A lounge area, a cafe where everyone gets together for lunch," she says. "It could be an outdoor space. Now that we have technology and WiFi everywhere, being able to go outside and have a meeting is really great to give to your people to spurt new ideas and creativity."

"It turns out people who can focus are three times more satisfied with the noise levels in their office, and they're much happier with the functionality of the work space," Dufner says. "It's really about the ability to have a balance of focus areas for heads-down work and collaborative areas."

"A Delicate Balance"

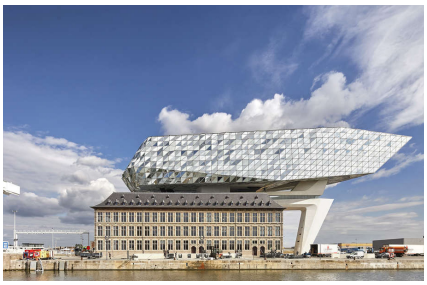
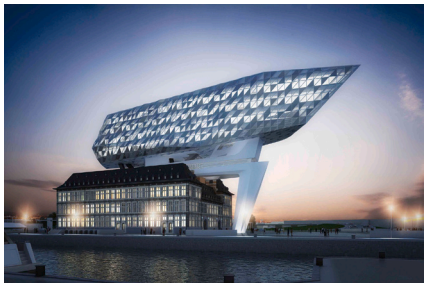
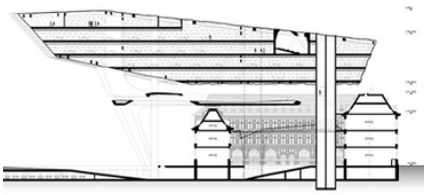
The title of Edward Albee's Pulitzer-prize winning 1966 uneasy play about upper middle-class suburbanites draws its title from the tension with a permanent house guest, Claire, and the sudden appearance of old family friends Harry and Edna who ask to stay, which is compounded further when Agnes and Tobias's bitter 36-year old daughter Julia returns home after her failed fourth marriage.

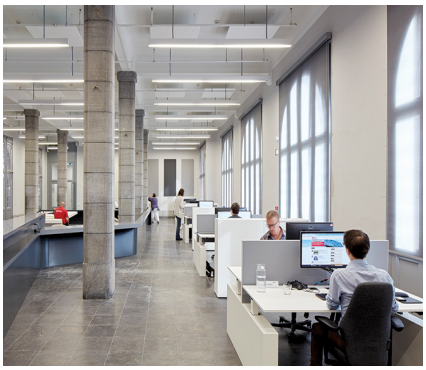
Design firms today have an obligation to work with clients to determine the work tasks, tools, work flows and cultural dynamics to create that appropriate 'delicate balance' each client needs for heads-down concentration work and collegial, collaborative tasks. But design firms today are often content to ignore the essential qualitative and quantitative space needs of the clients workers and instead, just accept desking open plan standards pushed by the corporate real estate folks and splash a bit of style in the community areas.

In fact, it is now rare that a photo spread of a new workplace project in design magazines even show the areas where people are supposed to do work. It is a media denial of the challenge and the failure of the design professions to perform comprehensive programming with clients to determine the true nature and styles of work being performed.

A few selected examples are worthy of note:

Antwerp Port Authority; Zaha Hadid Architects

The recently concluded Antwerp Port Authority HQ Expansion by the late Zaha Hadid's office, which lands this very expensive polymorphic "glass blob" atop Antwerp's historic port house to provide space for expanded needs. The photos reveal the dazzling blob and its angular and curving dramatic common areas. But the purpose of the facility – to house people who work, appears to have been largely ignored by the design team as the work areas reveal the most common, ordinary and disappointing desking arrangements.

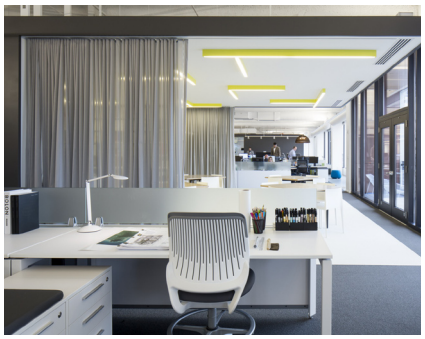
NBBJ/ Columbus:

A nationally prominent Seattle-based firm elected to move its Columbus, OH office from the suburbs back downtown when its lease expired. To fit on one floor, NBBJ embraced a barrier-free desking space standard for all personnel, so there is no visual privacy for anyone at their assigned space. A minimal number of huddle spaces are provided for heads-down work. The floor is concrete and the steel structure is exposed so there is no acoustical privacy either.

There are a few communal tables for team work but no significant privacy places, so the office design is not an activity-based design. NBBJ's website claim = "Workplaces are changing. Private offices and cubicle farms are giving way to open, informal, collaborative space. Younger employees expect more flexible hours and work environments. And there's growing recognition that well-designed offices create healthier, happier, more productive employees.

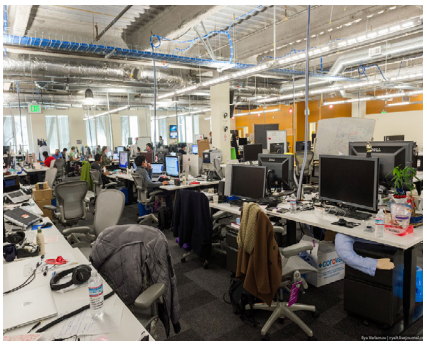
At NBBJ, we're not only on top of these trends, we're driving them. Our workplace design emphasizes people and performance, helping you achieve your strategic goals. We create workplaces that help you innovate and meet the challenges of your market. Places that inspire, and help you attract and retain talent. Places to collaborate and places to focus. Places that clarify and transform your vision, values, and culture."

But they are places with no visual or acoustical privacy. NBBJ also designed the Bill & Melinda Gates Foundation HQ. Their photos of the 640,000 sf LEED Platinum facility show no spaces where people actually work. Their photos of the Microsoft West campus R+D Building in China show no spaces where people actually work.

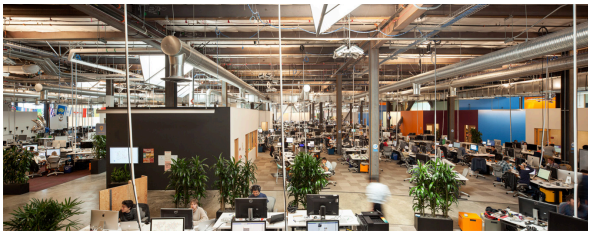


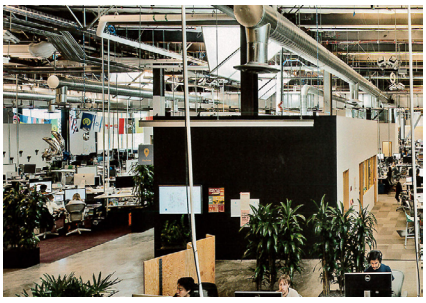
Facebook HQ:

Mark Zuckerberg never saw Facebook as the kind of company that would commission a big-shot starchitect to build its new campus. It's a very popular thing to do in Silicon Valley, but Facebook was more interested in building a headquarters that was "unassuming, matter-of-fact and cost effective." When Frank Gehry, who is known for exactly none of those things, first offered to design the company's 430,000-square-foot complex, the Facebook founder actually turned him down. "We figured he would be very expensive and that would send the wrong signal about our culture," Zuckerberg revealed in a Facebook post this week.



But Gehry kept wooing Zuckerberg, who eventually caved. The starchitect made a few uncharacteristic offers, saying he would match any bid that another firm submitted. According to Zuckerberg: "It ended up costing us much less than any other major developments planned in Silicon Valley and taking way less time to build." The resulting building, however, is as far





from “unassuming” as you can get. It is wildly colorful, and involves a temporary adult ballpoint.

Here’s how Zuckerberg tells the story:

“I want to share a story as we settle into our new building at Facebook.

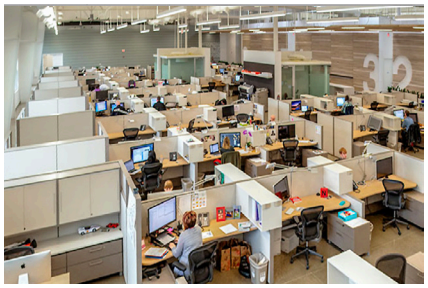
When we first announced we were adding a building to our campus, Frank Gehry reached out and asked to design it. He really believes in our mission to connect the world. But even though we all loved his architecture, we initially said no. We figured he would be very expensive and that would send the wrong signal about our culture.
Frank came back to us and said we should go get other bids and that he would beat them all — and he did. As I learned, most building construction wastes a lot of materials and time due to poor planning. Frank has designed special software to assist in his architecture, so he’s very efficient.

In the end, our building finished ahead of schedule and under budget. It’s the only construction project I’ve ever heard of achieving this. It ended up costing us much less than any other major developments planned in Silicon Valley and taking way less time to build.
Here’s a photo of an early model of the building sitting inside the actual building.”

What Zuckerberg got is a space that looks unfinished all right. It also has exposed construction overhead, exposed concrete floors in most places. No visual or acoustical privacy.

Newell Rubbermaid:

Eva Maddox at Perkins & Will is known for her exemplary branding and design work. But her project for Newell Rubbermaid is yet another example of handsome common areas and work areas utterly lacking in visual and acous-



tical privacy due to exposed construction, concrete floors and visual limited barriers. Handsome horizontal bands of wood slats are used in welcoming and circulation areas that speak to archaic materials, instead of the polymers NR makes its products with.

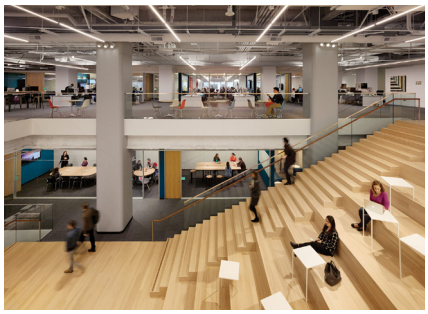
Get-away spaces for the 115 employees are a refreshment center, the reception area, four small glass-enclosed huddle rooms, and nine conference rooms.

Bank of America:

The 300,000 sf San Francisco Bank of America data center designed by Bohlin Cywinski Jackson features "bench-style" work desks on either side of a central boulevard lined with a variety of working spaces, including lounge areas, conference rooms and semi-private acoustically lined "work cabanas."

The three floors of 100k sf each – four times the size of an average office building's floor – were so large that BCJ sought to unify the floors with a 'amphitheater stair' that itself provides zones that the architects hoped would be used for individual work, group meetings and large presentations. The stair is equipped with small movable tables that enable users to create their own work environment.

The photos require close examination to see the row after row of desking open plan workstations with zero visual or acoustical privacy with exposed construction overhead.



iHeart Media:

iHeart CEO Robert Pittman made his money with MTV and Century 21 Real Estate. The radio and billboard conglomerate iHeart has developed a 'white plus color' brand identity for its various locations. In moving the HQ to New York City, design firms Architecture + Information and Beneville Studios successfully designed a 75,000 sf office with a number of popular trends and still managed to not forget about the needs of the occupants to do good work.

A communal stair, an eye-popping elevator lobby and reception area for a wide-awake first impression, open plan desking work stations for staff with

limited barrier separation, colorful corridors and conference areas, and huddle rooms distributed throughout in the open plan areas for staff to capture when they need visual or acoustical privacy.

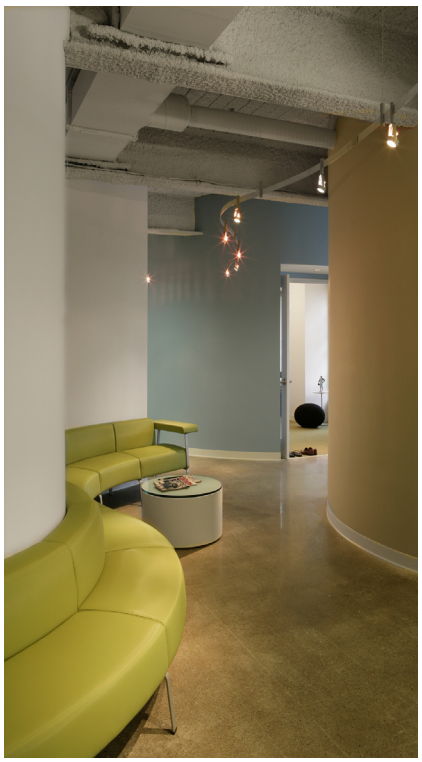
Our Balancing Act:

We have always started our discovery process by asking "Who are you?," What do you do?," "How do you do it?," and "What does that involve?" The answers to those questions imply physical design criteria, not just an Excel spreadsheet that restates the organizational chart with the space standards applied to each hierarchical level.

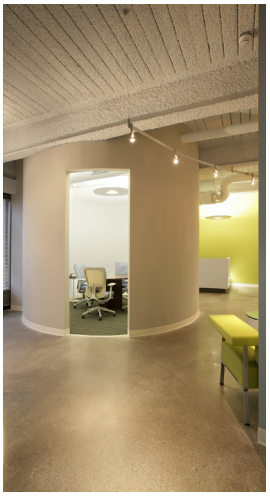
By defining what and how work is done, design criteria and space standards with appropriate characteristics for visual and acoustical privacy result. This important analytical task is too often stepped over by the AD community today in accepting or proposing open plan space standards that lack the attributes necessary for occupants to properly perform their work tasks.

At the risk of self-promotion, the following projects present traditional and non-traditional approaches to office design that seek to provide that delicate balance of open and closed environments that meet the visual and acoustical privacy needs of the occupants.

LRMR Management Company



LRMR is the marketing firm founded by NBA Superstar MVP LeBron James with his grade school friend, Maverick Carter. Their offices reflect 'new work' – talking on the phone, reviewing videos of promotional proposals, music videos - very little paper work except by the few finance and accounting staff. Four space standards were developed to meet staff needs: large corner offices for the principals, glass-faced private offices for principals and managers, semi-enclosed offices with no glass fronts and open plan work stations with movable work surfaces for staff and interns who work with ear buds on to do their work.



A variety of informal and formal meeting and huddle areas exist with and without doors allow occupants to access areas for enclosed privacy ranging to communal tables for collaboration and socialization.

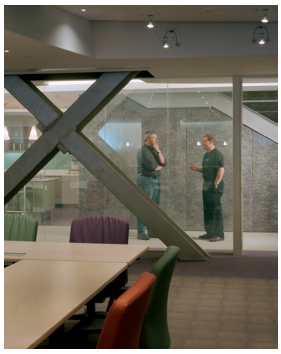
McKinsey & Company, Inc.

For our fourth project for McK over 20 years, a relocation enabled us to address a call new smaller corporate standards while still addressing the balancing of the work tasks undertaken by this world-renowned international management consultant. Partners and Directors were awarded private perimeter offices 50% smaller than their previous offices. Consultants were assigned small shared two-person perimeter offices with translucent glass fronts to allow people to see if someone was in and share daylight to the interior. A closed door meant that heads-down concentration work was in progress – effectively a 'Do Not Disturb' sign.

The office dimensions were derivation of one another and the building mod-

ule so that change due to shifting headcount could be accommodated in a cost-effective manner. Power, telephone and data assets were installed so that if a larger office needed to be converted to two smaller ones, only the demising partition needed to be added, which was quick, economical and not disruptive. In the words of Managing Partner Jeff Sinclair, "We achieved our alignment of space with our work tasks, culture and the very demanding corporate real estate standards. And in the process, our offices became the envy of every one of our colleagues across the country."

An internal stair, Copy and Refreshment Centers were strategically located to encourage people to run into one another and enhance social and work relationships, so seating and collaboration areas encourage these interactions. The largest US installation of electronic privacy glass was utilized at conference and the Hard Rock Café training/ multi-purpose area so that glass can be changed from clear to translucent and the flick of a switch which re-aligns photons in an interlayer between the glass. This, support areas also enjoy shared daylight while being able to successfully address visual privacy needs.



Dollar Bank/ Cleveland

This Pittsburgh bank wanted its Cleveland operations – 25 years on the ground but not well known in the marketplace – to become more visible so using space as a marketing took was a key objective. The corner-facing two floors of a former retail galleria were selected, with glass on three sides.

We created a new brand identity by photographing one of the two lions outside their 1854 Pittsburgh main branch, removing the second floor above the new branch and blowing the lion up and rendering it in mosaic tiles on a two-story feature wall in the branch facing the intersection.

Banking regulations and common sense required that certain tasks and functions be given visual and acoustical privacy of customer information and interactions. DB's traditional space standards of drywall offices and high-panel work stations did not align with the marketing objectives and space leased which had glass on three sides facing a corner with 10,000 cars a day passing by.

Space standards were developed for tasks instead of job titles in both retail

and office occupancies. Glass was embraced and screened to translucent at critical locations at both envelope and interior locations, making the specs read as a dynamic and visually accessible place. Work stations featured uniform panel heights with varying glass configurations to manage sight lines and customer information privacy, while affording staff visual and acoustical privacy with a modular sound masking system.

Greater Cleveland Partnership

The Greater Cleveland Partnership is northeast Ohio's chamber of commerce and economic development engine. For 20 years, the chamber had occupied the second and third floors of Cleveland's historic Terminal Tower around the rotunda skylight where 40,000 people a day made their transition from the rapid transit train station below.

In determining the qualitative and quantitative space needs of the departments and individuals, design criteria and new space standards were utilized to evaluate dozens of alternative locations. In seeking a more legible location that could also serve as an impetus to other economic development initiatives, GCP chose to partner with Positively Cleveland, the area's convention and visitors bureau, to lease the first and second floor of the former historic Higbee's department store on Public Square.

Five basic space standards based on work tasks were selected, including perimeter offices with demountable glass walls to bring daylight to the interior of the 90,000 sf floor plates of the building.

Open plan work stations with varying degrees of visual privacy were selected based on interaction and concentration tasks, knowing that absorptive panels, carpeted floors, acoustic ceilings and a central modular sound masking system were be included to assure appropriate visual and speech privacy.

S. Rose Company

This Haworth furniture dealer engaged us to completely redesign their four-story downtown building to meet dual needs: provide an effective functional environment for 60 employees as well as a dynamic showroom experience for prospective customers/ specifiers that presents the company's partners' products effectively with flexibility for a range of visitor sequences to stimulate sales.

The luxury to utilize a full range of enclosed and open plan systems products enabled us to design an environment with a wide range of workstation configurations to address visual and acoustical privacy in varying ways.

Two fundamentally different visitor sequences were designed to work from either the ground up or from the top down depending upon how much time each prospect had to invest in their discovery.

The Physiology of Work:

Sitting at your desk all day is not good for you. A new study by Jungsoo Kim and Richard de Dear of the University of Sydney Faculty of Architecture found that people who sit for eight to 11 hours daily increase their chances of death by 15 percent in four years. These complications get worse with age and people older than 45 who sit for at least 11 hours a day will increase their death chances by 40 percent.

So the current rage is to employ height-adjustable work surfaces, which the contract furniture industry loves to sell because they cost four times what a fixed work surface costs. Yoga ball chairs, kneeling chairs or even treadmill desks can also be healthy alternatives.

These non-standard options help increase energy levels, too, eliminating the "3 o'clock slump." And according to The Centers for Disease Control and

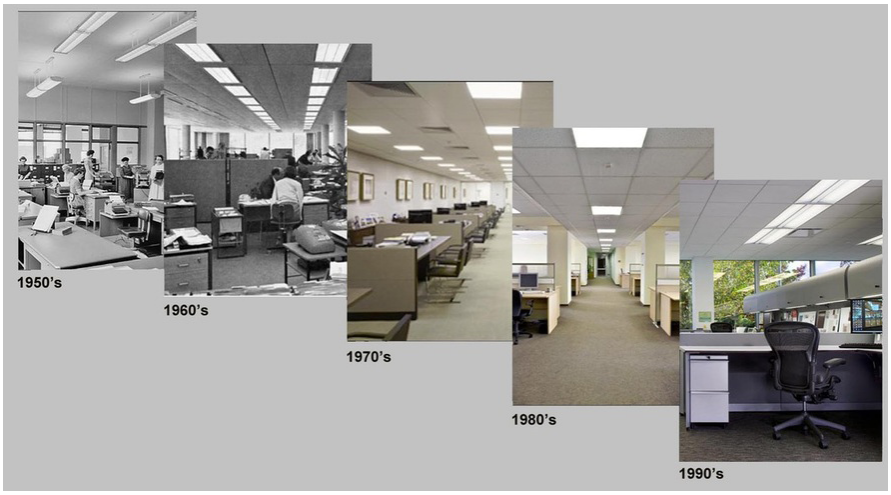
Prevention, healthy employees are not only more productive, but they also exhibit more long-term loyalty to the business.

Extensive international research from Ipsos and the Workspace Futures Team of Steelcase shows that 85% of people are dissatisfied with their working environment and can't concentrate. Of those surveyed 95% said working privately was important to them, but only 41% said they could do so, and 31% had to leave the office to get work completed.

More than 10,000 workers across 14 countries were surveyed, and key findings also showed that:

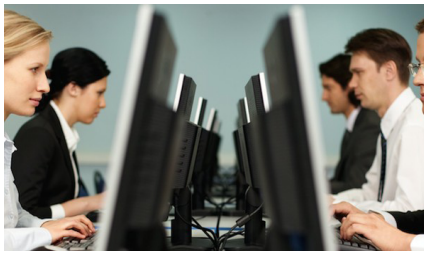
- Office workers are losing 86 minutes a day due to distractions
- Many employees are unmotivated, unproductive and overly stressed
- They have little capacity to think and work creatively and constructively

The Ipsos survey follows a separate one earlier this year from Canada Life Group Insurance suggesting that open-plan offices may be detrimental to an employee's health, wellbeing and productivity. Only 6.1% surveyed thought it was healthy to be in an open-plan environment and just 6.5% thought it was productive.



The health issues are real. In the Canada Life survey, those employees surveyed who worked in open-plan offices took over 70% more sick days than those who worked from home. And a recent study from the University of Arizona found that when someone comes into work sick, about half of the commonly touched surfaces such as telephones, desktops, tabletops, doorknobs, photocopier, lift buttons and the office fridge will become infected with the virus by lunchtime.

The statistics follow a clear move over the years towards a more collaborative working environment, rather than one that offers private space to concentrate on work and for effective wellbeing. In many instances, employees are work-



ing in extremely close proximity of each other where conversations, monitors, files and personal belongings are invading their space.

The introduction of new laws in Canada giving every employee with 26 weeks or more service the right to apply to work flexibly by staggering hours or working from home may help alleviate some of the privacy issues while improving productivity in Canada (In order to make a flexible working application, you must set out your request in writing. Your employer is then required to consider such request objectively and in a "reasonable manner", but remember it is only a right to ask for flexible working – not to be given it. Employers can reject the request, but they must do so for specific business reasons - such as the burden of additional costs - and you should be notified of the decision within three months.

The Kim and deDear study found that open plan offices have detrimental effects on workplace productivity despite previous claims that such configurations promote communication and boost morale, Based on a survey of more than 42,000 United States office workers, the researchers found that workers who had private offices were far more satisfied than those in an open-plan office.

The main problems for open-plan workers were the small amount of space as well as what the researchers called "sound privacy," Management-Issues.com points out. Employers saving money by putting workers together may have argued that ease of communication made up for the size of the working space. This was not the case, however, according to the survey.

"Our results categorically contradict the industry-accepted wisdom that open-plan layout enhances communication between colleagues and improves occupants' overall work environmental satisfaction," the researchers wrote. "The open-plan proponents' argument that open-plan improves morale and productivity appears to have no basis in the research literature."

This isn't the first study to argue against open-plan office spaces, however. A 2009 review article found that 90 percent of studies looking at open-plan offices linked them to health problems such as high stress and high blood pressure, according to the BBC. Meanwhile, a 1982 study cited by the British Psychological Society Research Digest found that open-plan offices have also been found to discourage communication among employees due to

lack of privacy.

"Trends" vs. "Fads" vs. Relevant Thinking:

The Architectural/ Design industry is very fashion-aware and is vulnerable to trends. Frank Gehry got everyone aspiring to designing polymorphic projects with wild, fun, exciting shapes with his Weisman Art Museum at the University of Minnesota in Minneapolis in 1993. But it was the Guggenheim in Bilbao, Spain in 1997 that brought him and his style international acclaim and made him rich.

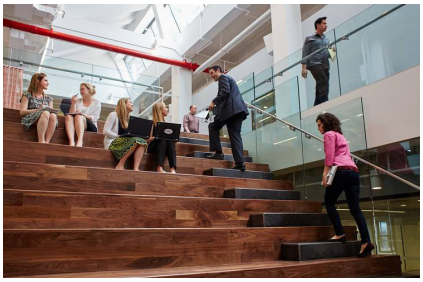
Gehry's notoriety hatched the terms "Bilbao Effect" and "Starchitect" to represent the phenomena whereby architects whose celebrity and critical acclaim have transformed them into the idols of the architectural world and given them fame among the general public. Wikipedia today lists 33 architects on its Starchitects page that the authors feel have been elevated to this status. The implication is that the work of these architects are admired, respected and plagiarized in subtle and not-so-subtle ways. The Washington Post has labeled Gehry 'the world's most famous living architect,' as assertion which with the unexpected death of Zaha Hadid in 2016, enjoys little debate today.

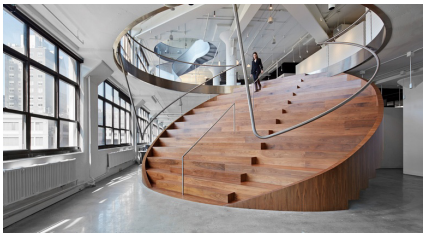
Indeed, the Palladian window used in the Basilica in Vincenza by Andrea Palladio was actually designed by the great Donato Bramante in the St. Mark's Library in Venice.

Christopher Wren's dome of London's St. Paul's Cathedral is inconceivable without Michelangelo's dome of St. Peter's in Rome. The US Capitol in Washington by Thomas Ustick Walter was modeled after Wren's design for St. Paul's because Walter admired it so.

In 1983, New York Times Writer Joseph Giovannini wrote that architects cannot help but be influenced by the work of other architects. For the eclectic New York architect Robert A.M. Stern, borrowing is not so much an issue as a principle: ''As long as the source is good, I steal. Not in the sense of taking away from another architect - he is not poorer because of a theft but is in fact more influential. We copy, borrow and derive motifs from other architects. Artists have always quoted other artists.''

In today's workplace, Architects and Designers are driven to outdo one another - partly our of ego and partly out of the competitive nature of competitive commercial enterprise. Designers must be 'hip' and up on current trends to be seen as creative and worthy of important commissions. Like the television media today, where being first takes precedent over fact-checking or being right, Design and Architecture magazines compete with one anther to be their very first to publish important new avant-garde projects, increasingly before they are eve completed or occupied. And increasingly, the magazines appear only interested in the 'money shots' of dramatic common area spaces with many spreads not bothering to present a legitimate examination or presentation of a project by omitting altogether photos of the





spaces where people actually work. This reinforces a belief system that the actual purpose of a project - providing a useful environment for people to work effectively - becomes less relevant than the fashion or appearance of the spaces.

And so office design today reflects a series of trends that appear in project after project. At times, the devices, tools, ideas or gimmicks appear useful and at times, they appear to be forced. An incomplete summary of those trends that appear to be the most popular today are:

Steps:

The sales pitch from the Design Team to the client sounds something like, "We feel that the best way to bring your people together though they are spread over multiple floors and destigmatize the unspoken status and value associated with 'lower floors' is to include monumental stair that will not only promote interaction by providing a central and efficient way for people to get from floor to floor, but it will also function as a social and interaction zone where people can choose to meet and exchange ideas and enhance your ability to innovate."

Stairs are expensive to build.

Big stairs are very expensive to build.

Big stairs cost big money every year, especially when you are removing hundreds if not thousands of square feet of space that you are paying rent on every year.

Code officials hate stairs without handrails and code-required riser heights and tread depths. You will need more time to appeal for a variance - which you may not get.

Making effective use of the space under a stair is a bitch.

Desking Systems:

By now, one of the central ideas of this white paper is that desking systems have been over-specified by AD firms at the expense of providing clients with work settings where people can do the full range of their work tasks with any reasonable degree of effectiveness or productivity.

Cafe Spaces:

Cafe spaces can be very effective areas for interaction, socialization and idea exchange. In our former office, we had a terrific cafe space that was buffered from staff open plan areas by full height walls and our 1200 sf library so sounds from conversations were not a distraction to people who were on their phones or concentrating on their computer-based work tasks.

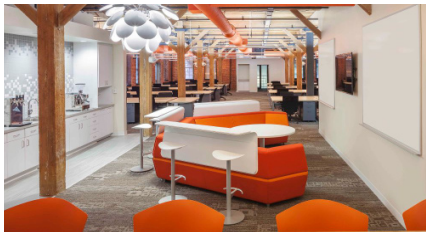
One had to walk by this cafe area to get to the main conference room, which was a corner area with remarkable daylight and outstanding views of Lake Erie and the CBD from the 29th floor of the tower where we were located. And while the cafe area was an interior area with no daylight of consequence and the stools were not the most comfortable, it was the preferred meeting area if the group size was six or less.

But designers today are making office cafe areas into large zones with communal tables and lounge seating not unlike airport red carpet clubs. But too often designers are not sensitive to the integration of absorptive floor, wall and/ or ceiling materials to control noise and minimize disruption to adjacent work areas.

Employee surveys own a piece of responsibility for this phenomena. A high percentage of surveys indicate that when people are asked to name their favorite work place, they write "Starbucks," which the employer naturally seeks to recreate to be responsive and hip for the Millennials.

"Cool Spaces"

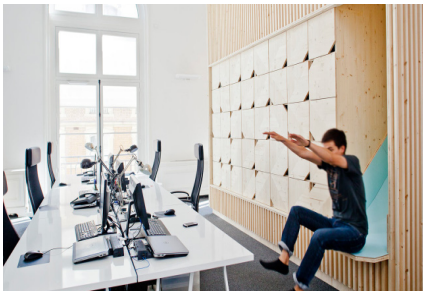
Zany colors, informal hipster furniture, bean bag seating, wavy millwork elements, pool tables, slides, swings - just about anything goes to create a memorable space that becomes a place in the minds of constituents and visitors. Google pioneered the integration of the unusual and bizarre with their beer bars, tiki bars, hammocks and the like. But the standard work area at Google has been a 12' x 12' open plan space with only 40" high panels that is shared by four people who face away from one another with 4' work surface and a space for a guest stool of file. Period.



Many of these spaces reflect a low expenditure on construction or surface materials. If and when density increases, they are the first areas to be put to a more formal affirmative use.

White:

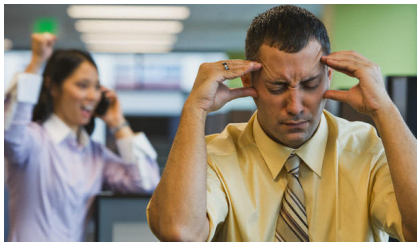
White is the new hot color for everything: walls, ceilings, desks, even furniture. When this becomes too sterile for clients, furniture fabrics are given an accent color while everything else remains white.

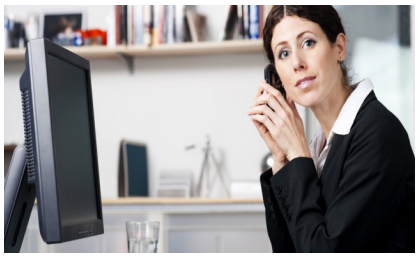


The Cleveland Clinic has embraced a new white brand identity for all of its facilities, despite the obligations to replace light grey carpet and constantly repaint walls.

Walnut/ Coffee:

Accent colors and wood finishes are walnut or coffee-brown. Walnut has, despite its cost, been elected to be the prominent wood material in today's offices for doors, furniture and millwork. Cherry, maple and other woods have been banished for the moment.





Behavioral Factors Affecting Work Interruptions

Deloitte Consulting LLP's Talent Strategies practice (Cotteler, Bendoly, 2014) has conducted extensive research into work interruptions, which are those elements that impact on concentrated tasks.

In academic circles this is referred to as "focused work," and according to Dave Coplin's book, The Rise of the Humans: How to Outsmart the Digital Deluge, humans typically only manage about 11 minutes of actual work at a stretch. And after an interruption from someone else, or taking a break to check email or send a quick text, it can take people from 15 to 23 minutes to get back to where they were before.

Behavioral economics is the examination of how psychological, social, and emotional factors often conflict with and override economic incentives when individuals or groups make decisions. The field has its roots in the work of Nobel Prize winner Herbert Simon, who as far back as 1959 questioned the classical economic theory that individuals rationally maximize the outcomes they seek (that is, their "utility") when making choices.

Ever since, scholars have argued, and demonstrated, that in the face of uncertainty, humans employ all manner of simple, easy-to-use, but often inaccurate cognitive shortcuts. People are not maximizers, but rather muddlers, struggling to cope with a reality that is much less certain, much more complex, and much more variable than they admit. Worse, as has been shown repeatedly by another Nobel Prize-winning behavioral economist, Daniel Kahneman, "We can be blind to the obvious, and we are also blind to our blindness."

Multitasking Interruptions

Today's offices are filled with employees surfing the Internet, posting social media updates, and texting about upcoming weekend plans, all while listening to a webinar or reading a draft of a document produced by a teammate. A recent study found that at any given point during the day, 15 percent of people were off-task. Users' multitasking is not limited to any one location as people simultaneously process multiple streams of information and entertainment while learning. It's no wonder that workers' inability to sustain focus is well documented within the literature.

Numerous studies show that people - particularly millennials - consistently choose multitasking—repeatedly turning their attention to something else before returning to and completing the task at hand—over focused work. Even in cases where subjects are instructed to focus their attention on something important, they routinely succumb to the urge to switch between activities—even unaware of how often they turn their attention elsewhere. For example:

In one study, college students volunteered to have their laptops monitored during class, and yet still spent 42 percent of their time on non-course-related activities, generating on average 65 open and active windows on their

laptop monitor during the lecture—63 percent of those open windows comprised of non-course-related activities (gaming, emails, web surfing, and entertainment). Students were not just distracted with one non-course-related activity, but were frequently switching between multiple activities at any given time.

This same study found that students on their laptops vastly underestimated their media use during class—underreporting instant messaging by 40 percent and email usage by 7 percent.

In another study of more than 1,000 college students, 80 percent admitted to texting during class; 15 percent admitted to sending 11 or more text messages during a single class session.

In the context of working, it is important to remember that the digital activities in which workers most commonly engage—Internet surfing, emails, texting—can compete for the same mental bandwidth that is demanded by learning. While people may vastly overestimate their ability to multitask and underestimate the frequency at which they do so, research demonstrates that individuals of any age have difficulty evaluating how well their own mental processes are operating at any given time, because most of these processes are unconscious. Our minds are simply not wired to simultaneously perform two intricate tasks.

Interruptions Cause Forgetting

Any interruption, technology-induced or otherwise, can lead to forgetting. Forgetting requires relearning, and relearning harms productivity. Research shows that the longer an interruption lasts, the more information relating to the task at hand will be forgotten. These costs accrue more rapidly where tasks require "significant concentration and attention." As a result, interruption, forgetting, and the need to relearn can lead to a variety of negative outcomes, including:

Work takes longer, driven by the duration of the distraction and the time spent to re-familiarize oneself with a task when returning to work.

The quality of the work suffers from the increased mental fatigue that results from repeatedly picking up and dropping a mental thread.

Retention falls as information is improperly "encoded" (that is, stored) in memory. Conditions at the time something is first learned are important when it comes to retention. One study found that multitasking during learning led to a whole letter grade drop (10 percent) in recognition and recall assessments.

Future application of knowledge is more difficult. The brain processes and stores information differently when distracted, making it more difficult to extend or extrapolate newly acquired learning to different contexts. Therefore, even if someone can learn something while distracted, they may not be able to flexibly or effectively use that information.

Research clearly shows us the cost of distractions and other interruptions to learning and workplace productivity.

Deloitte conducted experiments with strategies to mitigate interruptions including switching of tasks and sequestering. The switching study involved protocols with introducing additional tasks when interrupted. Both groups shows negative impacts on productivity.

The sequestering experiments were more relevant to office design.

In "mixed services" environments, workers are tasked with completing their regular work while also attending to incoming customer requests, or intrusions. When these intrusions become too great, organizations sometimes decouple the work both physically and procedurally. De-coupling allows some workers to focus exclusively on one type of work without customer-induced interruptions. Enabling this type of focused work has been validated as an operations strategy in service organizations.

Sequestering Strategies, Benefits and Their Costs

Following this line of inquiry, researchers tested multiple conditions—each unique in terms of the degree of sequestration, amount of forgetting, and frequency of interruption. Findings supported researchers' primary hypothesis with respect to sequestration:

Sequestration reduces both "average waiting time" and "average flow time" for the primary task.

Findings supported this outcome in particular when forgetting-induced rework was considered. With knowledge-intensive work, interruptions extend the time it takes to process the work. The added time includes the duration of the interruption plus the rework/relearning time that is required when workers return to their in-process routine work—in this case, needing to re-familiarize themselves with the patient's history and specifics of the exam in order to develop a reliable diagnosis.

Sequestration allows for some portion of the incoming interruptions to be directed to an unsequestered resource. This frees the sequestered resource to work uninterrupted, or less often interrupted, on routine tasks, and hence reduces rework/relearning time. As a result, routine tasks are processed more quickly.

But sequestration is not without its costs—in particular, to the speed with which interruptions are taken care of. Specifically:

With sequestration, workers accommodate interruptions less quickly, and the handling of interruptions requires more time.

With sequestration, there is some portion of resources that is dedicated to completing routine jobs. Therefore, it follows that with those resources un-

available to attend to incoming interruptions, the work requested via interruptions waits longer and is processed more slowly. This trade-off between higher throughput for routine work and lower throughput for work requested via interruptions requires a consideration of the overall productivity of the unit, for eventually, all work must be completed. Findings in this regard supported sequestration strategies. Specifically:

Sequestration led to overall gains in departmental productivity.

The trade-off in processing times (decrease in routine processing time versus increase in interruption processing time) revealed an average 75-second decrease in routine flow and waiting time, as compared to a 30-second increase in interruption flow and waiting time. That is, the throughput improvement for routine work was 150 percent greater than the throughput loss for interruptions. Interestingly, this trade-off held, and even got better, when the interruption rate increased. For example, the researchers found that when interruptions doubled, the benefit ratio increased to 400 percent (that is, a five-minute flow and wait time savings for routine work versus a 75-second increase for interruption flow and wait times). In summary:

With increasing amounts of sequestration, the time required to complete all work decreased. All work includes routine tasks and work requested via interruptions.

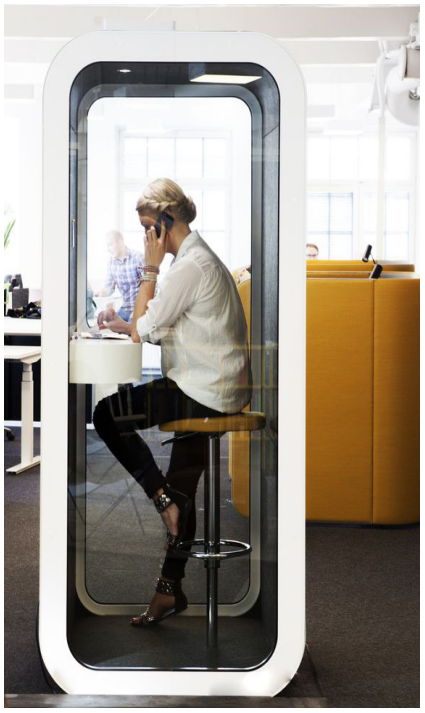
Sequestering decreased the time required to complete the department's work for two reasons. First, routine work accounts for the majority of the total work. And second, with sequestration, the increase in time required to handle an interruption is far less than the time saved by performing routine work under sequestered or partially sequestered conditions. Interestingly, a higher interruption rate made the time savings for the total shift even more pronounced.

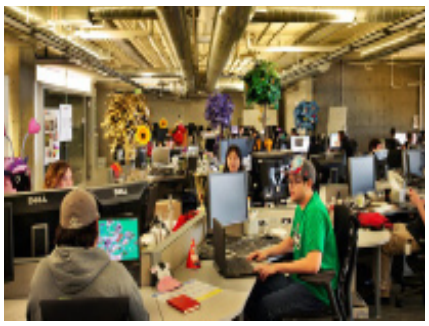
Effective Work Design Strategies for Multitasking and Interrupted Knowledge Work Environments

Workplace interruptions certainly have their costs. But simply knowing that doesn't help, since having the ability to deal with workplace interruptions is key to the success of flexible, reactive organizations. Fortunately, there may be intelligent approaches to reducing the worst kinds of interruptions, less disruptively timing necessary interruptions, and matching work assignments to those workers most resilient to lost productivity due to interruptions.

Both of the studies on which Deloitte focused provide insights that knowledge-intensive service organizations can use to develop policies that can enhance productivity. Based on these insights, Deloitte provides recommendations for structuring, assigning, and overseeing projects for companies within knowledge-intensive service industries.

To begin with, providing space that limits distractions which Deloitte characterizes as "sequestration," goes a long way to mitigating the problems





and costs associated with non-responsive work settings. But for those who have failed to connect the dots between the work space needs of constituents, Deloitte recommends:

STRUCTURING WORK

Structure projects as many short tasks. A modular approach to project design can provide workers with convenient switching points. A series of independent activities that require little information transfer between tasks offers more instances of "near task completion" that may prompt workers to be more resistant to switching tasks in response to unanticipated managerial progress checks.

Assign workers with a high rate of forgetting to routine project work. When the costs of delaying interruptions are acceptable, free resources who are susceptible to forgetting from interruptions and encourage them to adopt a closed-door policy focused on routine work.

Assign workers who suffer less from forgetting to handle incoming interruptions. Also consider shifting these workers to cover routine work that is detail-intensive and less conducive to modular design (that is, short tasks). These workers can work in less sequestered contexts to handle more interruptions.

Determine appropriate sequestration policy (zero, partial, complete) by department. Study both routine work and interruptions to determine the cost of delay for both (include costs for all downstream resources that could be rendered idle by virtue of a delay, and/or non-cost factors such as quality or safety). In high-interruption environments, or during periods where interruptions increase, consider strategies to dedicate resources to handling them, leaving others to stay focused on routine tasks.

SUPERVISING WORK

Create incentives for higher-priority projects. Savvy managers may realize that they can influence workers to switch projects and that they can use this influence to their advantage, getting their lower-priority projects greater focus. To counter this behavior, structure incentives for both managers and workers to resist switching to low-priority tasks and to focus on high-priority organizational efforts.

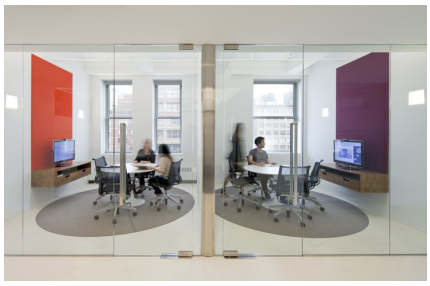
Encourage a predictable approach to project monitoring. Reward disciplined project managers capable of resisting the urge to perform unannounced progress checks. Workers will be less likely to unnecessarily switch projects if they work with project leaders who refrain from (intentionally or not) intimidating and exerting pressure to influence progress across projects with varying priority levels.

Communicate and intervene as necessary so workers understand when sequestration is important to maintain. Workers are more likely to resist sequestration when interruptions are occurring in rapid succession (ironically, when

sequestration may be most valuable). It is at this time that they will most need to be reassured by leaders to stay the course with routine work and let interruptions wait. Messaging should reinforce learning about how sequestration benefits the overall productivity of the collective department or organization.

These insights and observations hopefully serve as a starting point for management, designer and architects to begin evaluating more closely the nature of work and the physical resources employed to tackle it. The effective use of these insights is highly dependent on context. Therefore, the derived value of these insights can only be realized when they are successfully integrated into a specific knowledge-intensive operating environment.

While the potential benefits suggest this is a worthwhile pursuit, even here we recommend caution. Efforts to restructure workplace and work using the guidance presented here should take place in the context of a well-structured process, be appropriately prioritized, and involve focused personnel subjected to regular, yet planned check-ins with higher-level managers. Therein lies the path to efficient execution of the organization's work effort and the alignment of work and physical space to optimize performance.



Samantha Kraft and Bill Eberhard have worked together since 2005. Prior to forming Eberhard Architects LLC, Eberhard jointed Oliver Design Group in 1983 where he was Principal-in-Charge with offices in Pittsburgh, Cleveland, Detroit and Tampa. Both Kraft and Eberhard are graduates of the University of Cincinnati.

Eberhard's design for the 88,000 sf headquarters of Capitol Insurance Company received a national design award in the inaugural Corporate Outreach Design Awards Program established by the Institute for Business Designers/ IIDA and Cahners Publishing, featuring projects which significantly increase user productivity. Eberhard, both a registered architect and licensed interior designer, has been honored with over 40 local, state and national design awards.

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