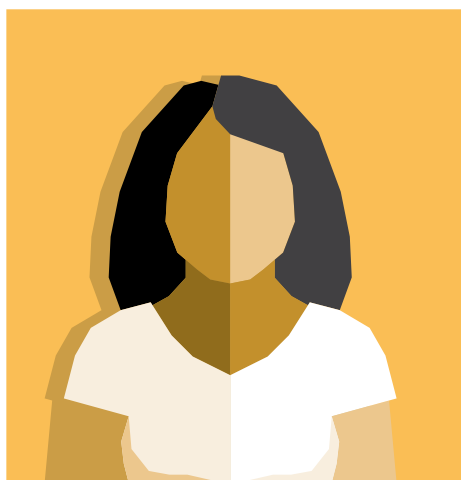# THE EFFECT OF INDIVIDUALIZED WORK SETTINGS ON PRODUCTIVITY AND WELL-BEING

three h

Perkins Eastman

This research looks at the evolution of office environments and examines how present day activity-based work environments support employee personalities and work modes. There has been extensive research to suggest the positive effect of activity-based work environments on employee performance, collaboration, and well-being. However the same attention has not been paid to the importance of individualization in these environments. We all have such vastly different personalities and it is important to be cognizant of these personal differences when determining in which environments we work and learn best. Activity-based work environments provide flexible work spaces to the degree that they offer a choice of where to work and can support a variety of work activities. However, the furnishings in these spaces often make little allowance for individual user preferences and/or unique work-styles—i.e. employee personality types. To investigate this issue, this study examines various topics that relate to the physical workplace, including an overview of the history and evolution of the office, a review of studies related to emerging trends in workplace design, and an investigation into the relationship between individual strengths/ personality type and the workplace's physical conditions. The second phase of this investigation will include an in-depth exploration of personality and intelligence types within an office setting, and how the physical environment may be shaped to optimally support both the individual and the organization as a whole.

TABLE OF CONTENTS

THE HISTORY OF OFFICE DESIGN

From the beginning of the 20th century to our current day, office design has undergone a number of major transformations due to economic and social changes. By the start of the 20th century, Frederick Winslow Taylor developed the concept of *scientific management,* dramatically influencing offices and their layouts (Napier, 2016). Focusing on employee efficiency and productivity along with workplace economics, Taylor found inspiration for his management concept in assembly line workers. Taylor believed that an efficient way for utilizing the workplaces was to place as many people as possible into an open environment (Napier, 2016), removing walls and space dividers to increase the speed and efficiency of document and task transmission. Taylorism, as it came to be known, was the norm for office design throughout the beginning of the last century.

Construction advancements supported the adoption of Taylorist workplace, with the first major innovation being the introduction of steel frame construction. Gaining popularity in the early 1900s, this construction type paved the way for the open-office plan by reducing the need for load-bearing walls and allowing for larger spans of space within a building (Human Spaces, n.d.). Architects such as Frank Lloyd Wright took advantage of steel frames in developing buildings like the Larkin Administration Building in New York. With its warehouse-like workspace featuring tightly-packed rows of desks and chairs, the building's layout epitomized the concept of Taylorism. And while the Larkin Administration Building was later criticized for its extreme focus on efficiency, which resulted in an impersonal and even demoralizing environment for workers, it introduced positive elements that would forever change workplace design, such as natural light and air conditioning.

LEFT: WORKSPACE

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three h

PROGRESSION OF WORKSPACE
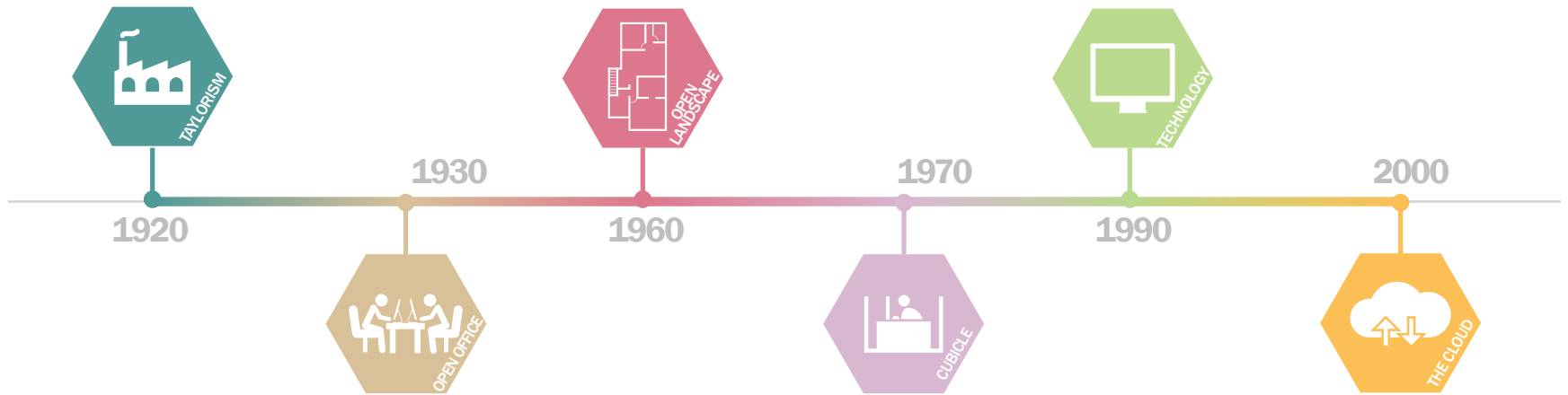
Wright's next famous attempt at the open office came in the 1930s in his design of the SC Johnson Administration Building (Hickey, 2015). The building is known for its iconic lily-pad shaped columns and generous glass skylights above a large open space filled with desks and workers. The building's open-office atrium became a lasting icon of the Taylorist workplace. The massive two-story atrium in the center of the building was dedicated to secretaries and staff, while administrators' private offices lined the exterior walls, taking full advantage of windows. This allocation of spaces developed a conspicuous hierarchy in the workplace that dominated office design and is still found in some workplaces today.

In the 1940s a new generation of people entered the workforce. Coined Traditionals, this generation comprised of individuals born between 1922 and 1945 who had grown up during the Great Depression. This group worked in the aforementioned office hierarchy and were known to have a heightened sense of loyalty and respect for authority and rules (Tolbize, 2008).

Teamwork, collaboration, and technology were important to this generation. However, because they were past-oriented and preferred things that they knew worked, change was not easily accepted (Tolbize, 2008).

A departure from Taylorisim appeared in the 1960s when Eberhard and Wolfgang Schnelle developed a new space planning system. Their system was based on research in communication patterns that occurred between departments and individuals. Their system was referred to as "Burolandschaft," or "office landscape," and offered a more natural alternative to office layout (Napier, 2016). Similar to the Taylorist workplace, desks were arranged to facilitate the efficient transmission of information, but with a fresh focus on the comfort and happiness of the worker. Collaboration and teamwork were prioritized, with desks arranged to optimize communication among workers. This new system required a much deeper building silhouette in order to accommodate the seemingly random placement of desks and the breakdown of

ABOVE: PROGRESSION OF WORKPLACE GRAPHIC

hierarchy that had previously prevailed (Ábalos and Herreros, 2003). Plants, screens, and other items were placed around the office to break up the space and provide a degree of privacy for employees. The Burolandschaft movement also introduced the idea that furnishings and partitions could be mobile, and that systems of furniture could be arranged in many different ways as part of a modular system (Ábalos and Herreros, 2003). However, due to a widespread production of inexpensive imitations by other companies, the positive aspects of the Burolandschaft movement were unfortunately lost.

Similar to the Taylorist workplace, desks were arranged to facilitate the efficient transmission of information, but with a fresh focus on the comfort and happiness of the worker.

In the mid-1960s a second wave of individuals entered the workforce, the Baby Boomers. Born between 1946 and 1964, following the end of World War II, Baby Boomers surpassed previous generations by approximately 17 million people (Tolbize, 2008). Baby Boomers experienced monumental events such as the Vietnam War, the Civil Rights movement, Watergate, and the Cold War, which instilled in them a "protest-against-power" attitude. Such an attitude may have contributed to them breaking from the past-oriented and risk-averse manner prevalent amongst the *Traditional Generation* (Tolbize, 2008). **In the workplace, Baby Boomers were driven by the idea of working hard for success, and many toiled for long hours in order to achieve the financial rewards they desired.**

In response to a workforce dominated by Baby Boomers, Robert Propst and the Herman Miller Research Corporation began research and development on a new furniture system that would give the individual worker more control over their work environment. As a result, in 1964 they introduced the Action Office system. The system featured desks and workplaces of varying heights that was intended to allow the user to assume the best position suited to a certain task. However, the system was extremely expensive, hard to assemble and not suited to large offices thus was ultimately left to fade away (Sisson, 2013). Propst then reinvented the Action Office and produced a second version, now with panel dividers that were intended to be shaped in a manner that best suited the task at hand. Although this version became very popular, it's original layout and the function intended by Propst's design was lost during the economic downturn of the 1970s. With a renewed focus on economic conservation, a return to real-estate efficiency prevailed and the maximum number of employees were again housed in the smallest amount of space possible (Sisson, 2013). This caused the Action Office II system to take on a more rigid, square shaped cubicles, allowing for maximum efficiency and less adaptability to tasks.

In a short amount of time the cubicle, as it came to be known, was in full force in the workplace. Pushed together to create long, rectangular rows of partitioned spaces, the cubicle landscape brought back a pronounced hierarchy reminiscent of the Taylorist period. This new system of open office furniture was meant to increase employee efficiency, however, due in part to

1 TALKING

2 VIDEO

3 PHONE

4 LETTER

5 IM

6 TEXT MSG

7 EMAIL

8 FACEBOOK MESSAGE

9 FACEBOOK STATUS

10 TWITTER

a tumultuous economy, the cubicle was viewed as a miserable waiting space for employees to ride out their days before being laid-off (Saval, 2014).

In the 1980s, society experienced an ideological shift from a mentality that *lives to work* to one that works to live. The generation born between 1965 and 1980 grew up during a time when the job market was slow and financial insecurity was a widespread concern. Known as *Generation X*, this group entered the workforce and brought with them new expectations for a balance between work and life (Tolbize, 2008). In the workplace, Generation X workers are typically more independent and favor flexible work arrangements and a reasonable work/life balance (Chao, 2005).

The inclusion of a new generation (Gen X) along with the rise of different technologies in the 1990s including personal laptops, mobile phones, and the Internet all resulted in significant

changes within the workplace. Offices became less dependent on paper and face-to-face communication than ever before (Human Spaces, n.d.) which freed workers to complete tasks away from their desk when at the office and eventually allowing them to move to spaces outside the office such as their homes or cafés. At the same time, the growing cost of running a business in a city center enticed companies to adopt more flexible policies, allowing employees to work remotely or on varying flexible time schedules. (Hickey, 2015).

The Millennial generation began to enter the workforce around the turn of the century, and as every generation that proceeded it, its members introduced new ideas and approaches to workplace design. Growing up in the age of constant technological advances, Born between 1978 and 2002, Millennials are extremely proficient with—and sometimes reliant on—personal technology (Tolbize, 2008). They feel that an office hierarchy should be broken down so that lines of communication

ABOVE: MODES OF COMMUNICATION GRAPHIC ——

allow their ideas to be heard by the executives, and prefer frequent positive feedback from their employers. Millennials expect a work/life balance, and desire flexibility in terms of the hours and location of work. **Overall, Millennials have been described as independent, collaborative, entrepreneurial and confident, with some arguing this generation has pushed society towards a more casual workplace (Tolbize, 2008).**

Many Millennials found coffee shops to be ideal working environments for both collaboration and focused, *heads-down* work. Realizing these preferences, some organizations have searched for a way to introduce the design features specific to café spaces into the workplace and began to offer

as a result a range of seating options and settings within the office environment (Human Spaces, n.d.). Some companies further developed this idea, creating innovative office spaces with modular furniture, bright colors, and various types of collaboration spaces. Features like phone booths, quiet rooms, open dining cafés, and casual meeting rooms slowly replaced rigid, formal conference rooms and cubicles of the traditional offices. Since originating in the early 2000s this approach has now become the new standard for office design due to its innate adaptability to many types of organizations and various work types.

20TH CENTURY WORKSTYLE
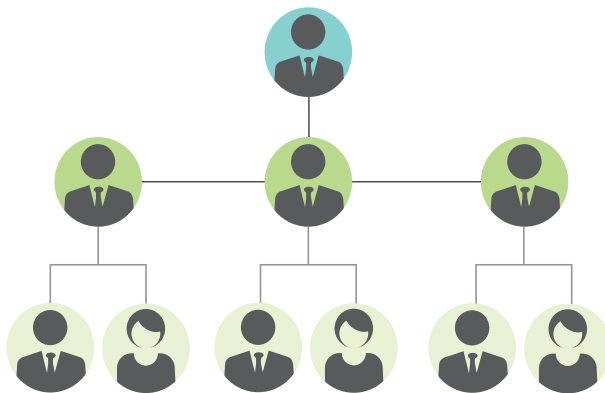
Linear flow/hieratchical structure

21ST CENTURY WORKSTYLE
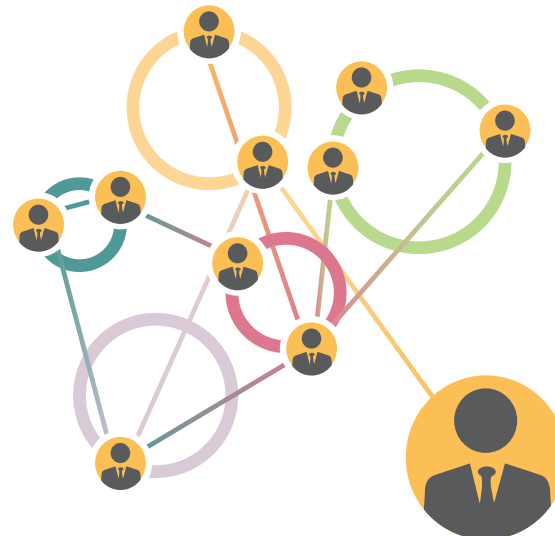
Complex flow/networked structure

ABOVE: WORKPLACE EVOLUTION GRAPHIC

Activity-Based Workplaces for Knowledge Workers

The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn
Alvin Toffler

As society moved slowly from an industrial to a **knowledge-based economy**, values in the workplace shifted as well. The term "knowledge workers," first used in the 1960s, became more common as employees' work increasingly relied on knowledge acquisition and innovation and less so on repetition (Greene and Myerson, 2011). Originally limited to doctors, scientists, and academicians, the definition of knowledge workers has evolved to include most executive and management positions (Myerson, 2008). With this shift the nature of work was no longer dominated by repetitive, production-oriented tasks but emphasized instead creativity, innovation, and adaptability. This has ultimately transformed the way people interact with one another and their work environment.

Work patterns changed as knowledge workers increasingly demanded quick access to information and interdisciplinary collaborations within their organizations and beyond (Andersen, Fisker and Feldthaus, 2012). Technology made this possible by allowing employees to work with anyone, anywhere, and at any time, freeing them on a virtual level. On a physical level, however, office designs were still heavily influenced by Taylorism, offering employees an open sea of monotonous desks and cubicles. This arguably boxed people into their own individual spots and limited their ability to quickly and easily reach out to other people, resources, and methods of working.

LEFT: WORKSPACE

During the 1990s, the discrepancy between the manner in which people wanted to work and the way in which their offices allowed them to work became a pressing issue. Among those who offered alternative ways of working were Veldhoen + Company, a management consulting company that founded the activity-based work approach in the Netherlands (Hartmans and Kamperman, 2009). Veldhoen + Co. believed employers needed to give their employees freedom, trust, and the responsibility of choosing the right spaces to productively complete their work. They argued, people complete a variety of different tasks and requiring workers to complete all of them in a single location is irrational. Alternatively, Veldhoen + Co. believed workplaces need to support the different tasks employees undertake without dictating where they perform these tasks (Hartmans and Kamperman, 2009).This is meant to potentially "encourage collaboration, empower entrepreneurship," and "create a scope for creativity" (Hartmans and Kamperman, 2009). Veldhoen + Co.'s activity-based workplace provides a variety of spaces that vary in their visual, acoustic, and ambient qualities. Employees can choose the spaces that suit the task they are undertaking. For example, when a worker needs to complete focused work, they can choose to work in an environment that offers high-acoustic privacy, some visual privacy, and a calming ambiance.

As an activity-based workplace is meant to respond to the variety of tasks workers undertake, identifying these various tasks and categorizing them is arguably important. Heerwagen et al. (cited in Haynes, 2007), for example, divided the nature of a knowledge worker's task into two main functions: one highly cognitive, and the other based in social interactions. As such, knowledge workers would require some spaces that are conducive to collaboration, and others that support focused, individual work. Similarly, Knoll identified three main categories of activities that people may alternate between while working, namely, **heads-down focused work, formal and informal collaboration, and social interactions** (O'Niel and Wymer, 2011). For example, one might start the day working on heads-down, focused tasks (e.g. writing, emailing, analyzing), move on to collaborating with colleagues (e.g. large and small meeting, impromptu meetings, structured team work), then take periodic breaks throughout the day to socialize and recharge. **Each type of activity has its own value and is necessary for individuals to complete their work, and it is therefore important that a workplace is designed to accommodate all three types of tasks.**

Unlike traditional office layouts where each individual is assigned a dedicated workspace, in activity-based workplaces (ABWs) employees are not tethered to an assigned desk or workstation, but rather they have a variety of different workspaces from which to choose. **Research demonstrating desks in traditional offices are only occupied 35 – 60% of the time (Kamperman and Hartmans, 2009) support the argument for activity-based-workplace as opposed to traditional layouts. Within an ABW design direction, two primary space types emerge: individual assigned workspaces (provided in a limited number) and non-assigned shared spaces (Knoll, 2012).** Within unassigned, shared environments a number of supplemental meeting space types emerge which serve different needs such as single-person quite spaces and large community-based workspaces (Knoll, 2012).

Usable square feet (USF) per seat:

HIGH	**220**
AVERAGE	**142**
LOW	**95**

Usable square feet (USF) per seat:

INDUSTRY	HIGH	AVERAGE	LOW	Workspace Type (ENCLOSE / OPEN)		Workspace Seats vs. Alternative Seats (WORKSPACE / ALTERNATIVE)	
All Industry Average	220	142	95	11%	89%	53%	47%
Financial	222	137	95	9%	91%	54%	46%
Professional Services	253	185	126	21%	79%	54%	46%
Consumer Product	197	169	130	11%	89%	42%	58%
Digital Media	155	131	118		100%	50%	50%

would rather have no job than a job that they hate

*Source: *The Millenial Takeover* by Red Tree Leadership and Development

3 OUT OF 5 MILLENIALS feel that they will switch jobs in less than five years

4 OUT OF 5 MILLENIALS want regular feedback from their boss

4 OUT OF 5 MILLENIALS think that they deserve to be recognized more for their work

1 OUT OF 4 MILLENIALS say they are completely satisfied with their current job

9 OUT OF 10 MILLENIALS think they deserve their dream job

7 OUT OF 10 MILLENIALS say they need "me time" at work

ONE THIRD OF MILLENNI- prefer recognition from their boss or coworkers or a promotion over higher pay

75 MILLION BABY BOOMERS
1945-1965

50 MILLION GEN X
1966-1979

70 MILLION GEN Y
1980-2000

CURRENT WORKFORCE

WORKFORCE IN 2020

ABOVE: WORKPLACE UTILIZATION AND GENERATIONAL SHIFT GRAPHICS.

three h

Activity Based Workplaces

Activity-based work environments typically offer a variety of space types that vary in openness, including completely open spaces (e.g. benching workstations), semi-partitioned spaces (e.g. meeting spaces surrounded by movable panels), and fully enclosed spaces (e.g. traditional offices), complemented by a diverse selection of furnishings (e.g. traditional desks, soft seating, lounging solutions).** A study published by the Harvard Business Review showed that knowledge workers who were allowed to decide where, when, and how they work were more likely to perform better and express satisfaction with their jobs (Hoskins, 2014). Activity-based work environments have been shown to improve collaboration, increase productivity, break down perceived hierarchies, and increase employee satisfaction (ABW Knowledge Center, 2016). **As an added benefit, activity-based work environments have been shown to utilize space more efficiently** than in the traditional office, which reduces operational costs and eases the burden of rearranging spaces as employees join or leave an organization (Wohlers and Hertel, 2016).

Some activity-based workplaces have greatly limited assigned spaces in favor of policies such as hot-desking, hoteling and free address policies (Lamagna, 2015). Hot-desking dedicates a number of unassigned desks and supporting technologies to employees traveling from one office to another, while hoteling is a similar concept that allows employees to reserve a particular desk for a specified amount of time. Finally, free address refers to employees who do not need to be in the physical office at all for their job (Lamagna, 2015). The underlying goal of these strategies is often related to space optimization, but it is important to apply these policies carefully to ABW as they could have a negative impact on employee satisfaction and productivity.

LEFT: WORKSPACE

One of the effects of limiting assigned spaces within activity-based work environments, and a general criticism of ABWs, is that they cater more towards workers who are naturally more extroverted by providing many options for collaborating, socializing and interacting, and not enough dedicated quiet spaces for introverted personality types. Additionally, excessively using unassigned desks decreases the people's ability to personalize their workspace. Research has shown that employees associate comfort, status, achievement, territory, control, identity and humanization (Manninen, 2014) with the freedom to alter their personal space. Lack of personalization can lead to employees losing their sense of identity. In fact, one study conducted at a technology-based company revealed that some employees felt they had lost part of their identity when their office transitioned to a system of unassigned workstations (Elsbach, 2003). Personalization is also important to increasing organizational loyalty. As some studies have shown, workers with the ability to tailor their workspaces have generated more positive feelings of commitment towards the organization itself (Brown & Zhu, 2016).

Another criticism of ABWs is that they assume all knowledge workers have the same spatial requirements (Greene and Myerson, 2011), and essentially place employees in a figurative (although larger and more flexible) cubicle. Providing the same environment for all workers—even if that environment is more diverse than the traditional office environment—does not acknowledge important research studies that have demonstrated personal preferences inform where people choose to work (Appel-Meulenbroek, Groenen & Janssen, 2011).

Personal preference may vary due to a number of different factors, one of which may arguably be each individual's personality and the effect that has on the way people learn and work. Understanding different personality types and the varying spatial needs associated with them is a unique endeavor within workplace thinking. Floating from one location to the next within a workplace and beyond may be ideal for some individuals but a source of extreme anxiety for others. Additionally, the ability to tailor a workplace may matter very little to some individuals while be of fundamental importance to others. Uncovering how people's needs and potential success in an office differs based on their personality can arguably help overcome some of the current shortcomings in ABWs, and in office design in general. This exploration adds an additional level of understanding of why and how people choose to work and will therefore be explored further in the following section.
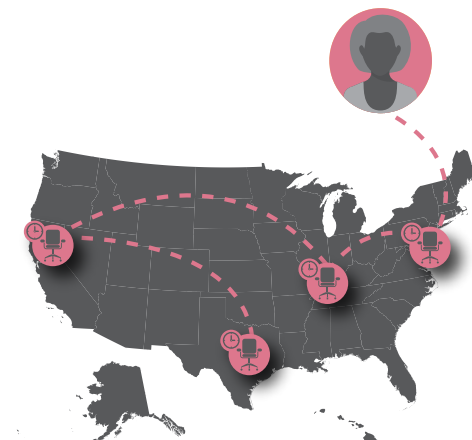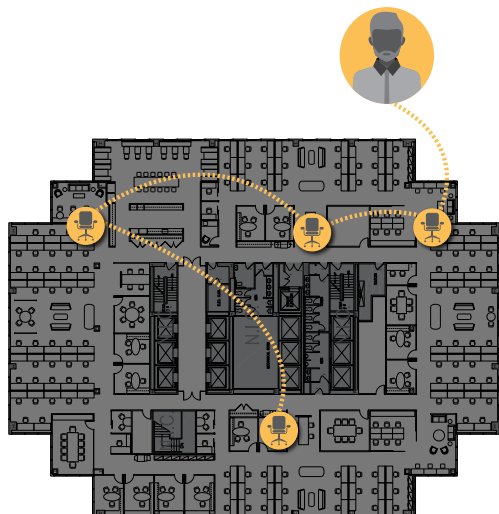
ABOVE & RIGHT: THIRD PLACE GRAPHICS
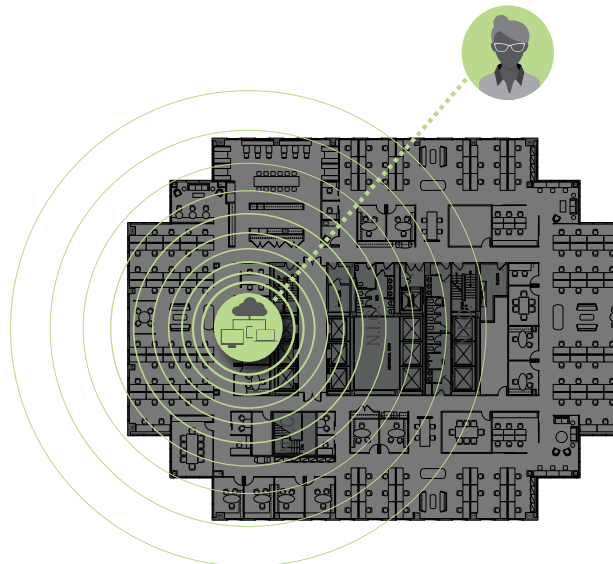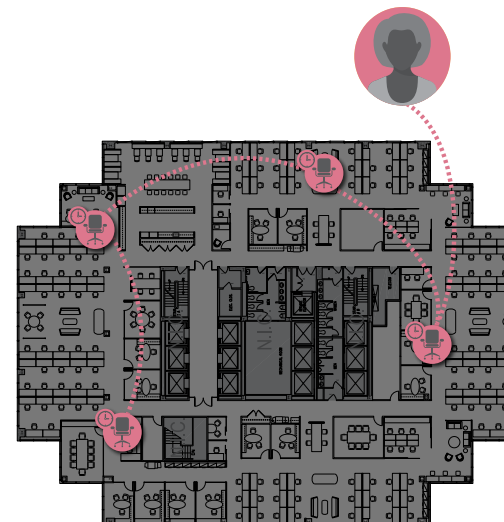
HOT-DESKING

FREE ADDRESS

HOTELING

HOT-DESKING

FREE ADDRESS

HOTELING

ABOVE: HOT-DESKING, FREE-ADDRESS &
HOTELING GRAPHIC

TRADITIONAL WORKPLACE

ACTIVITY BASED WORKPLACE

SPACE TYPE

WORK	BENCHING
	FLEX OFFICE
	PARKING SPOT / FLEX-HEIGHT
	PHONE BOOTH
	SMALL GROUP
TEAM	COLLABORATION CAFE
	LIVING ROOM / LIBRARY
	MEETING / CONFERENCE
	COPY / STORAGE / IT
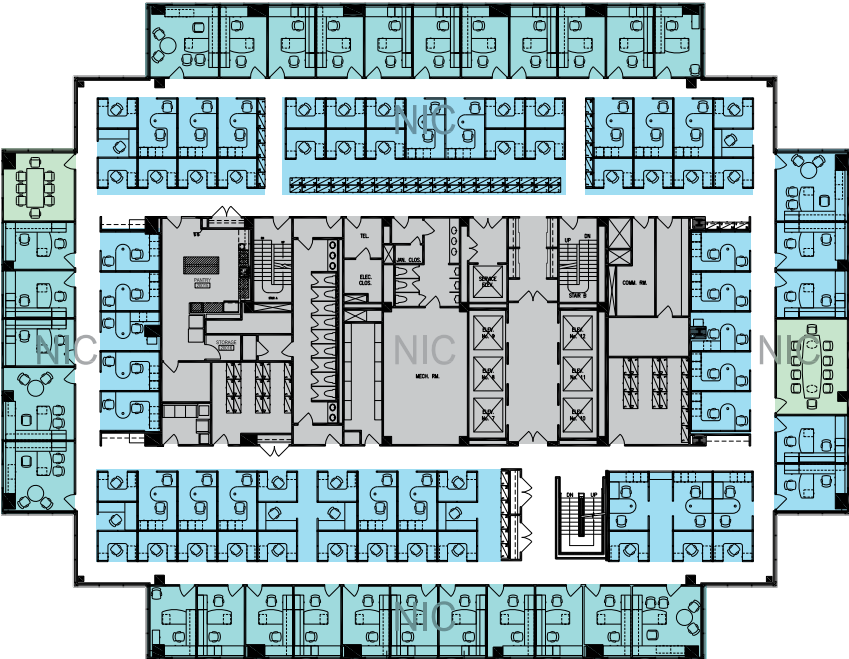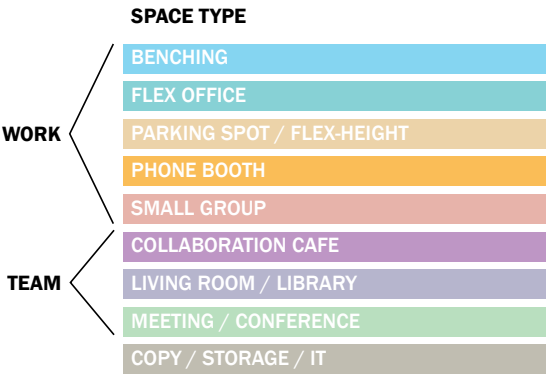
ABOVE: OFFICE LAYOUT COMPARISON
TECHNOLOGY COMPANY

Perkins Eastman

DECORATIVE LIGHTING & DESIGN FEATURES
SOFT LIGHTING AND DESIGN FEATURES IS USED TO PROVIDE A COMFORTABLE ENVIRONMENT.

PRESENTATION AREAS
PROVIDING AMPLE PRESENTATION SPACES ALLOW FOR THE PRESENTATION OF IDEAS AND COLLABORATION BETWEEN EMPLOYEES.

CHANGES IN SCALE
CHANGES IN SCALE WITHIN THE SPACE CREATES A MIX OF INTIMATE AND PUBLIC SPACES.

GATHERING

WORK AREAS
PROVIDING A MULTITUDE OF PLACES TO WORK AND HOLD MEETINGS.

SOFT SEATING
HAVING SOFT SEATING OPTIONS PROVIDES COMFORTABLE SPACES FOR PEOPLE TO RELAX AND TAKE REFUGE.

ABOVE: ACTIVITY BASED WORKPLACE CHARACTERISTICS

Personalities and Intellect in the Workplace

Although there are a number of different tools to identify personality types, some have been more widely employed, particularly in relation to employee personalities. Among the most prominent are the Myers-Briggs Type Indicator (MBTI) and Gardner's Multiple Intelligence (MI). Each of these tools measures a different aspect; the MBTI identifies personality type, while the MI test indicates an intelligence type that relates to how people learn and apply knowledge. Both traits are important to identify, particularly when designing for knowledge workers who are dealing primarily with acquiring and applying knowledge through filters of their unique intellect. To understand these tests and their implications, the following section will provide a brief overview of each.

MYERS-BRIGGS TYPE INDICATOR (MBTI)

The Myers-Briggs Type Indicator (MBTI) was developed by Isabel Briggs Myers and her mother, Katharine Briggs, based on C.G. Jung's theory of psychological types. According to the MBTI Foundation (2016a), the purpose of the MBTI personality inventory was to help make Jung's theory accessible to, and usable by, various people. **The MBTI uncovers a pattern behind the seemingly arbitrary differences that individuals display in their manner of perceiving and judging. Perceiving involves the various ways through which people obtain awareness and knowledge, while judging is described as the way through which one reaches conclusions about what was perceived or learned (The Myers & Briggs Foundation, Kise, 2006).**

Both the theories of Jung and MBTI argue that people are either born with, or develop, their own preferred ways of perceiving and judging. The MBTI sorts these preferences into four dichotomies from which 16 distinct personality types are derived. The four dichotomies are:

- Extroversion/Introversion
- Intuition/Sensing
- Feeling/Thinking
- Perception/Judging

On its website the MBTI Foundation provides basic descriptions of the four dichotomies. The first pair, extroversion/introversion, relates to how people recharge and harness energy. Some individuals derive energy from the external world through socializing and interacting with people (extroverts) while others require solitude and introspection for energy rejuvenation (introverts) (2016b). The second dichotomy, intuition/sensing, relates to whether a person receives information through their senses (sensing), while others rely on facts or the patterns of information they receive to make decisions (intuition) (2016c). The preferences of thinking/feeling are tied to decision processes, with some individuals basing their decisions on objective facts (thinkers) and others placing more weight on personal values and beliefs (feelers) (2016d). Finally, perception and judgment are described as overarching tendencies that guide the way a person leads their life, with some preferring a structured and planned lifestyle (judging) and others leaning towards a lifestyle that is flexible and responsive (perceiving) (2016e).

Each of these tools measures a different aspect; the MBTI identifies personality type, while the MI test indicates an intelligence type that relates to how people learn and apply knowledge.

Both MBTI founders, along with Jung, have emphasized that these preferences represent what people *like*, but that there are no better or worse preferences (the Myers and Briggs Foundation, 2016). Most individuals are capable of, and often do, act against their preferences depending on the circumstances. For example, an introvert may need to, and in some cases enjoy socializing with large groups of people due to business or work commitments. But in spite of the occasional deviation, individuals more often display patterns of behavior that lean towards preferences represented by the MBTI inventory.

The MBTI inventory outlines sixteen personality types derived from the four dichotomies. Each personality type, which can be determined by a simple MBTI assessment, is given a four-letter code based on one's dominant preferences.

For example, the first personality type (ISTJ) refers to an individual who prefers introversion, sensing, thinking, and judging. According to MBTI Foundation, ISTJ individuals are: *Quiet, serious, earn success by thoroughness and dependability. Practical, matter-of-fact, realistic, and responsible. Decide logically what should be done and work toward it steadily, regardless of distractions. Take pleasure in making everything orderly and organized - their work, their home, their life. Value traditions and loyalty.*

While those who fall within the ENTP personality type tend to be:

Quick, ingenious, stimulating, alert, and outspoken. Resourceful in solving new and challenging problems. Adept at generating conceptual possibilities and then analyzing them strategically. Good at reading other people. Bored by routine, will seldom do the same thing the same way, apt to turn to one new interest after another.

MULTIPLE INTELLIGENCE (MI)

The multiple intelligence theory was developed by Howard Gardner, professor of cognition and education at Harvard Graduate School of Education. His theory represented a departure from the popular notion of intelligence as something that could be measured through a simple IQ. test. Instead, Gardner viewed intelligence as multi-dimensional and complex, and he set about studying it in a multi-disciplinary manner. Through his research, Gardner determined that there are in fact multiple types of intelligence that can function in unison or

ISTJ
Guardian Inspector

ISFJ
Guardian Protector

INFJ
Idealist Counselor

INTJ
Rational Strategist

ISTP
Artisan Crafter

ISFP
Artisan Composer

INFP
Idealist Healer

INTP
Rational Philosopher

ESTP
Artisan Performer

ESFP
Artisan Entertainer

ENFP
Idealist Champion

ENTP
Rational Inventor

ESTJ
Guardian Supervisor

ESFJ
Guardian Provider

ENFJ
Idealist Teacher

ENTJ
Rational Commander

ABOVE: MBTI PERSONALITY TYPES GRAPHIC

independently, and identified seven different intelligence types (later adding an eighth and contemplating a ninth). Gardner described the eight intelligences as follows (Gardner, 2011).

1. Linguistic: An ability to analyze information and create products involving oral and written language such as speeches, books, and memos.

2. Logical-Mathematical: an ability to develop equations and proofs, make calculations, and solve abstract problems.

3. Spatial: an ability to recognize and manipulate large-scale and fine-grained spatial images.

4. Musical: an ability to produce, remember, and make meaning of different patterns of sound.

5. Naturalist: an ability to identify and distinguish among different types of plants, animals, and weather formations that are found in the natural world.

6. Bodily-Kinesthetic: an ability to use one's own body to create products or solve problems.

7. Interpersonal: an ability to recognize and understand other people's moods, desires, motivations, and intentions.

8. Intra-personal: an ability to recognize and understand his or her own moods, desires, motivations, and intentions

The first two intelligences listed (linguistic and logical-mathematical) are often the ones that result in high IQ. scores (Gilman, 2001). Similar to MBTI, Gardener's MI theory does not limit an individual to a single intelligence type, but suggests that individuals have an affinity towards some intelligences more than the others.

The benefits of MI evaluations have been relevant in a number of areas, particularly within the educational sector where educators were able to gain more insights into the unique ways students learn. In 2009, Gardner and his colleagues published Multiple Intelligences around the World, a book wherein they described how various educational institutes have made use of MI. The book contained ideas from 42 scholars in 15 countries covering educational levels from preschool to university (Gardner, 2011).

ABOVE: HOWARD GARDNER'S MULTIPLE
INTELLIGENCES GRAPHIC

The Importance of Employee and Office Environment Fit

The Society of Human Resource Management (SHRM) and Deloitte's recent Human Capital Trends have identified an increased competition to secure and retain talent (Schramm, 2016). **Deloitte outlined the forces they believe are driving global change in the "talent landscape," (Deloitte, 2016) including the multi-generational demographic of workers, the accessibility of technology, the agility required to keep up with an innovative and changing business climate, and the new relationship workers expect to have with their organizations.** The last driver relates to employees expecting a compelling and enriching work experience from their employers.

It seems, however, that many knowledge workers are frustrated in their expectations, as only 34 percent of U.S. workers feel engaged at work according to a Gallup study (cited in: Lytle, 2016). Some have argued that lack of engagement can result in lower productivity and profitability (Lytle, 2016), which can hurt a company's bottom line. As such Lytle (2016), through SHRM, has suggested a number of ways for companies to increase engagement; one that stands out is their suggestion to provide employees with "individualized attention," which could be achieved by identifying employees' personal tendencies and catering to their specific needs. Lytle (2016) cited Timberlane as an example of a company that administers personality tests to help understand employees on a deeper level. This helps managers form the right teams and assign appropriate tasks based on each person's skill-set. **Lylte also argued that there are common preferences shared amongst all employees, regardless of personality type, that can increase engagement such as giving workers control and autonomy over where and how they work, in order to better engage their employees.**

LEFT: WORKSPACE

three h

For a while, remote working was seen as a way to provide employees with freedom and flexibility. But the trend is now leaning in the opposite direction, with many firms urging their workers to return to the office (Haak, 2015). Yahoo is one prominent example of this reversed flow of employees. If the trend continues, knowledge workers may once again be spending the majority of their day within the confines of the office.

The need to attract and engage talent, along with a desire to encourage workers to come into the office, raises an important question: **what role can the physical office environment play in influencing work patterns and employee satisfaction?**

According to Kopec (2012), the human environment consists of "physical stimuli (noise, light, and temperature), physical structures (dimensions, furniture, and hallways), and symbolic artifacts (the meaning or image of a setting)" (Vischer, 2007). Interactions with these elements affect people's satisfaction with the space, along with their stress levels and health. If an individual's surroundings are over-stimulating, create physical barriers, or lack appropriate meaning, this is likely to have a negative impact on their wellbeing. People often combat situations they are not satisfied with, but combating the shortcomings of one's own work environment creates stress and consumes energy and time that could otherwise be dedicated to a different task (Vischer, 2007). Striking the right balance of physical stimuli, physical structures, and symbolic artifacts within a work setting is likely to result in improved creativity, productivity, and employee satisfaction.

INFORMAL COLLABORATION

FORMAL COLLABORATION

SOCIAL INTERACTIONS

HEADS DOWN FOCUSED WORK

ABOVE: WORK MODES GRAPHIC

According to Veldhoen + Company, the Dutch consulting firm credited with developing the concept of activity-based work, control and autonomy are critical to a successful work environment, and can increase engagement and decrease environmental stress (Hartmans and Kamperman, 2009). A number of studies have examined the influence of personal choice and control on employee satisfaction and productivity. **A Gensler study published in the Harvard Business Review revealed that knowledge workers who were given the freedom to choose where and how they work viewed their companies in a more positive light, performed better, and were more satisfied with their jobs (Hoskins, 2014).**

While the benefits of activity-based work environments have been well-documented, it is important to note that the concept must be applied correctly and supported not only by the physical environment but by the appropriate company policies and leadership. A recent study by Appel-Meulenbroek, et al. (2011) on the effectiveness of activity-based work environments revealed that when ABWs were not used as intended, the result was a decrease in productivity and employee health. The study, which was conducted using a combination of literature review, observation, and a survey administered to employees within four Dutch organizations, presented the advantages and disadvantages of activity-based work environments. Additionally, its findings suggested that personal preferences had the single largest influence on where people decided to work. It is important to note that the overall assumption of participants was that the ergonomics and IT systems are equally satisfactory in all spaces (Appel-Meulenbroek, Groenen & Janssen, 2011).

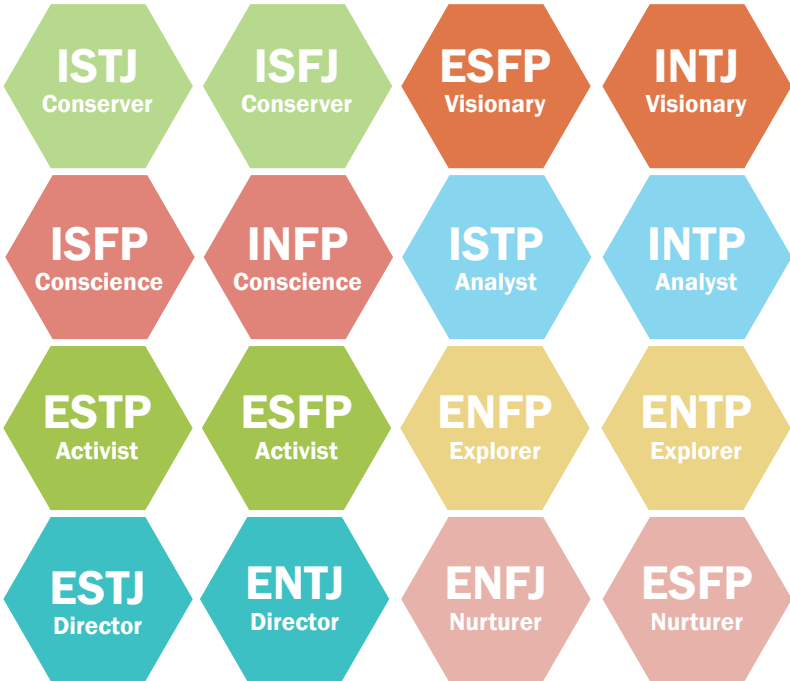ABOVE: MULTI-SENSORY WORKPLACE ENVIRONMENT GRAPHIC
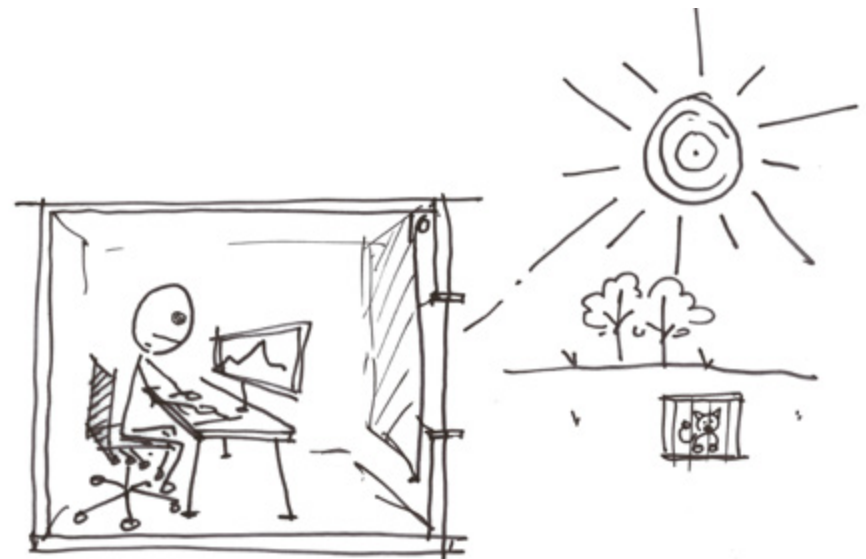
Activity Based Workplaces and Personality Types

Another study, conducted by OPP, a provider of business psychology solutions, and KI Europe, one of the largest furniture manufacturers, focused on the role that office environments can play in increasing employee satisfaction. The two groups worked to uncover the varying preferences that people have in the workplace based on their MBTI personality type. The report: *Workspace and Personality Type: a quick guide to creating a work environment* that everyone will love, relied on the 16 personality types identified through the Myers-Briggs Type Indicator. OPP and KI collated the 16 personalities into four groups based on a unifying and dominant characteristic.

For example, within Conserver/Activist group (ISTJ, ISFJ, ESTP, ESFP) the dominant characteristic is sensing. Within this dominant characteristic two sub-groups were identified: conservers and activists. Upon establishing the different groups and sub-groups of personalities, OPP and KI provided a description for each personality type and their workplace

preferences. For each personality type, the authors commented on their ideal work environment, space requirements (including both dedicated and shared spaces), storage needs, interaction/socializing preferences, and the importance of personalization.

According to the report, those in the Conscience sub- group (ISFP, INFP) for example, are kind and sympathetic. They often work alone and appreciate having their own space in which to surround themselves with objects of personal value. According to OPP and KI, such employees would prefer partitions in the office to block out noise and distractions, and add personal items. Those in the Nurturer sub-group (ESFJ, ENFJ) on the other hand enjoy having people in their space and do not prefer any partitions separating them from colleagues. For these individuals the ability to personalize their space is very important, which may not be the case for other personality types, such as Explorers (ENFP, ENTP) (Allread and Marras, 2006).

The main argument the study presented was that each personality type worked better within different environmental settings. This supports earlier studies that demonstrated employees whose personalities did not match their work environment expressed more anxiety than those who worked in environments aligned with their personality (Allread and Marras, 2006).
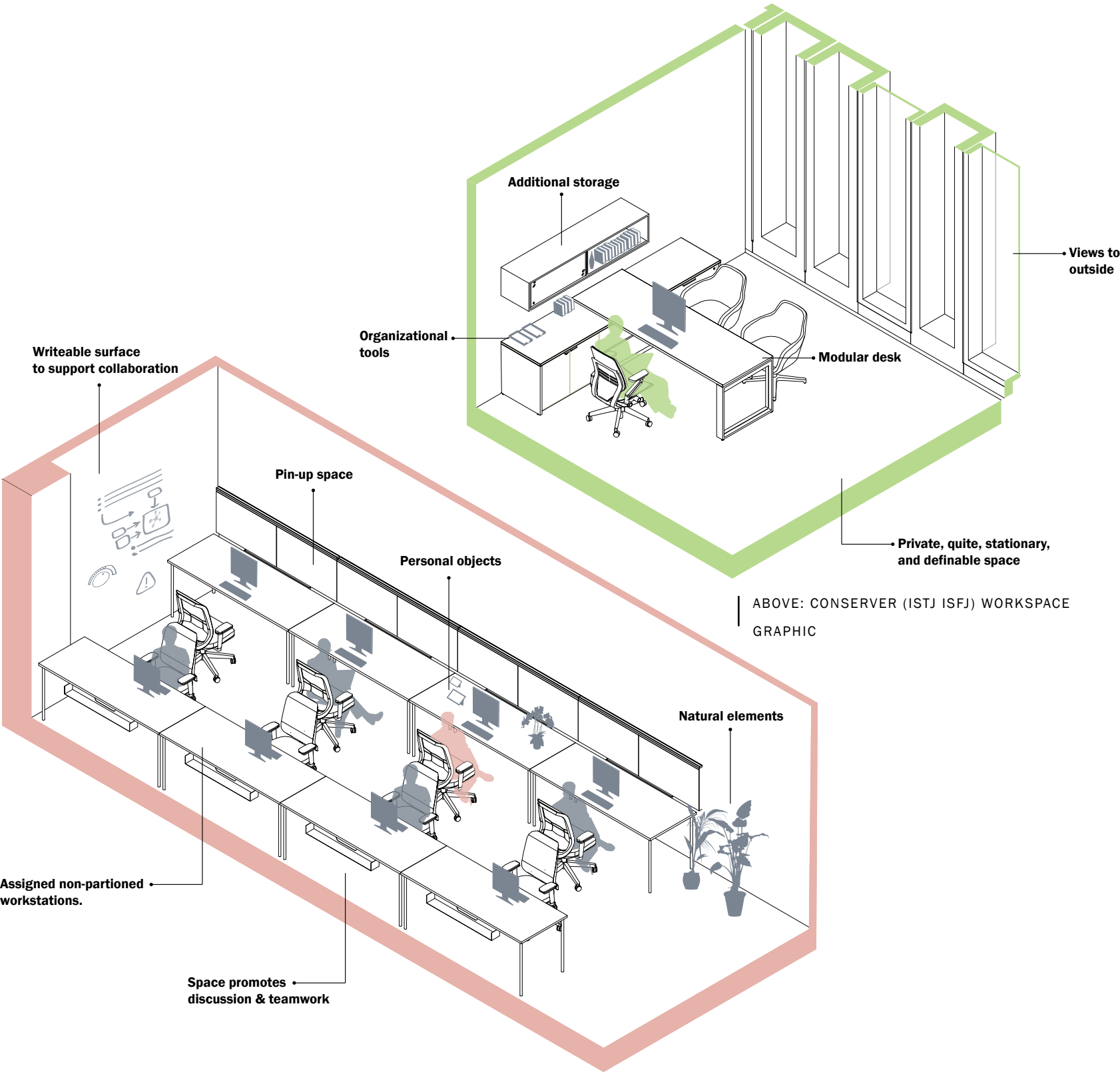
Aligning office environment with personality types is an intriguing possibility, but it is not the only useful direction to pursue. Intelligence types may also have an illuminating effect on office design if included in the considerations for the design. In her book, Stegmeier used international design and consulting firm IDEO as an example of a workplace that accommodates and stimulates various intelligences for optimal results. Through its adoption of a Montessori approach to learning, the workplace is filled with interesting tactile and visual objects that are meant to stimulate the senses. Stegmeier points to **IDEO's "Tech Box"** which is filled with a variety of objects, fabrics, materials, and toys for designers to look through, interact with, and find inspiration (McGrane, 1999). Such an approach could arguably be helpful for those with a preference for spatial and bodily-kinesthetic intelligence, where they would prefer to visually see and physically interact with objects as they form ideas and solve problems.

Applying a Multiple Intelligence lens to office deign could result in a space that caters to various employees' learning and intelligence affinities. For example, an office space can accommodate bodily- kinesthetic intelligences by providing space for employees to move and walk around as they think through or process information. Research on personality types and multiple intelligences is extensive and spans different sectors. **However, the question remains, how can insights from personalities and intelligences be utilized in office design, particularly, ABWs?** This question will be examined in the following section.
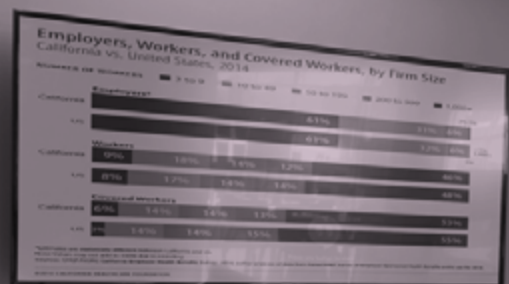

RIGHT : IDEO TECH BOX

Additional storage

Views to outside

Organizational tools

Writeable surface to support collaboration

Modular desk

Pin-up space

Private, quite, stationary, and definable space

Personal objects

ABOVE: CONSERVER (ISTJ ISFJ) WORKSPACE

GRAPHIC

Natural elements

Assigned non-partioned workstations.

Space promotes discussion & teamwork

ABOVE: NURTURER (ESFP, ENFJ)
WORKSPACE GRAPHIC

three h

Activity Based Workplace and Personalities

Most suggestions for overcoming ABW shortcomings relate to adding more options and giving users more choices. **But some studies suggest that might not be the right direction. According to findings presented by Appel-Meulenbroek, et al. (2011) the largest percentage of respondents (37%) only use two types of spaces within the workday, followed by those who use three spaces, and only 12% use more than three types. According to Appel-Meulenbroek et al. this finding does not support ABW basic concepts.** Further research is necessary to determine why people don't change spaces as often as anticipated. Knowing the varying personalities in an office space along with their preferred intelligences can help guide decisions on the type and number of spaces that will likely be used. For instance, if an office environment comprises mainly individuals who have linguistic intelligences and only a few who are logical-mathematical, offering a large variety of focused quiet spaces would not be ideal. Instead, the company is better off investing in a variety of sound-proof rooms that can accommodate a single person working through a problem verbally (i.e. by speaking to other people on the phone, practicing speeches, or pitches, etc.) along with larger rooms that allow team discussions and brainstorming sessions. This helps contain noise within a specific location in the office allowing those who are logical-mathematical focused to stay in their own space without needing to move to escape distraction.

Changing desks or locations in an office may be preferred by some employees however, according to findings from Appel-Meulenbroek, et al. (2011) 68% of the employees they surveyed never change their desk during the work day, and 35% indicated they avoid certain workstations because they know other people usually use them. Nesting, (Lanks, 2014)

LEFT: WORKSPACE

the phenomenon of people returning to the same desks repeatedly, has been observed in ABWs as well (Tay, 2013; Lanks, 2014). **Why have a variety of choices not resulted in more movement in the office space among these spaces?**

Changing desks or locations in an office may be preferred by some employees however, according to findings from Appel-Meulenbroek, et al. (2011) **68% of the employees they surveyed never change their desk during the work day,** and **35% indicated they avoid certain workstations because they know other people usually use them.**

One explanation may be found in Schwartz argument where he stipulated that just because "some choice is good doesn't necessarily mean that more choice is better" (2004 p .3). In fact, according to Schwartz, a professor of Social Theory and Social Action, too many choices can lead to "anxiety, stress, and dissatisfaction-even clinical depression" (2004 p. 3). The effect too many choices can have on individuals varies depending on the individual and his or her personality, as argued previously. **Nonetheless, knowing the personality landscape within an office can provide a good starting point from which to gauge the types and number of choices to provide. But can an office that needs to work for a variety of people and personalities also accommodate individual needs?**

The adaptability and trans-formability of the office environment is perhaps more important than providing a wide range of spaces. Imagine, for example, if the same footprint could easily and cost-efficiently transform to become an enclosed office, and in the event that office space should become unnecessary, it can then be transformed into a hub room, phone booth, or an open workstation. With such flexibility, employers can respond to the individual and collective needs of their employees without being left with unadaptable space should their employees change.

Customization and Personalization

As discussed previously, the importance of the physical work environment has been well documented in past decades. For better or worse, the material aspects of a workplace affect measurable and unmeasurable factors within an organization, from performance and productivity to employee satisfaction, recruitment and retention. **In the workplace of today, flexibility and adaptability rank highest among demands of both employers and employees. At the same time, as many workplaces transform to meet these demands, a greater awareness is emerging for the individual needs of employees and their personal working styles and preferences.** The more thoroughly the individual needs of an employee are understood—and accommodated—the happier and more productive that employee is likely to be. With this in mind, we have begun to explore the concepts of customization and personalization within the context of the physical work environment.

The terms *customization* and *personalization* are sometimes used interchangeably, both having to do with modifications to suit individual specifications or preferences. However, in the context of ecommerce and the on-line user experience, a more nuanced definition has emerged. **According to the Nielsen Norman Group, a consulting firm focused on evidence-based user experience research, personalization refers to modifications done by the system being used, while customization is done by the user.** For example, the concept of personalization is embodied in the highly curated user experience created by companies such as Amazon, Netflix, and Pandora, to name a few (Reverte, 2013). In the case of Amazon, an enormous—and growing—collection of data is analyzed and leveraged to streamline the individual shopping

LEFT: WORKSPACE ———

experience. With each user interaction the system becomes smarter and more personalized, providing individualized suggestions based on browsing history and previous searches. One of Amazon's best-known innovations in the on-line shopping experience is the "Customers Who Bought This Item Also Bought" feature, which uses an algorithmic method to determine recommendations based on the purchasing history of like-minded shoppers (Nicholson, n.d.). According to an article on PR Newswire, a recent study found that 55% of consumers search on Amazon first for their on-line shopping needs; Amazon's mastery of personalization is arguably one of the most critical factors that has led to its dominance in the on-line marketplace (BloomReach, 2016).

The concept of customization, on the other hand, takes an entirely different approach but has its appropriate place and practicality. When it comes to customization, the burden of decision and action falls squarely on the user. A familiar example of customization would be the user-controlled settings offered by email services such as Gmail and Yahoo. One has the ability to input preferences in order to manipulate privacy settings, filters, notifications, message format, and even color themes. These customization features allow the user to tailor their experience in ways that personalization cannot.

At a time when technology and the workplace are entwined as never before, and demands on both the worker and the workplace are evolving at a rapid pace, the adaptability of the physical environment is more important than ever. In our endeavor to explore the significance of customization

and personalization within the realm of the physical office environment, we ask: is it feasible to apply the notion of predictive technology to a physical environment? How could the concepts of personalization and customization be translated from a virtual environment (the internet) to a physical one (the workplace)? The importance of creating a work environment that satisfies an individual's specifications and preferences has been well-documented; the activity-based work environment begins to address this need by offering a variety of settings suited to various tasks and working styles. Why not take this a step further by leveraging available data (i.e. employee preferences, working habits, activity patterns, and personality type) in order to provide an optimal—customized and personalized—work environment, both for the individual employee and the organization as a whole?

This could manifest, for example, in workstation assignments that are personalized to meet the unique needs and characteristics of each employee based on the results of their MBTI or MI personality test. Employees who fall into the category of conserver (based on the aforementioned analysis of OPP and KI) might be assigned a partitioned workspace in a quiet part of the office that is adjacent to meeting and hub spaces, thus responding to the *conserver's* need for focused study with limited and controlled interruptions. In addition, the partitions would allow these employees to tailor their space with personal items, which creates a sense of security and belonging for conservers. On the opposite end of the spectrum, extroverted employees who fall into the category of activist, may prefer not to have an assigned workstation at all, but rather move from one setting to another throughout the day.

RIGHT: PERSONALIZATION AND
CUSTOMIZATION GRAPHIC

While workstation assignments matched to the preferences and needs of individual employees might be the first step in creating a personalized office space, further autonomy could be offered through customization features such as height-adjustable tables, multiple seating options (desk chair, lounge chair, stability ball, etc.), tack-able or writable surfaces, task lighting, or textile choices for panels that range in color and acoustical qualities, among other options.

There is much to be learned in the arena of personality types and the workplace. **While studies such as the analysis by OPP and KI have begun to examine the relationship between individual preferences and strengths and the physical work environment, a more rigorous investigation into the specific physical conditions that support (or undermine) these personality types could inform strategies for customization and personalization that lead to a happier and more productive workplace.**

PERSONALIZATION

HYBRID

CUSTOMIZATION

Adjustable shelf brakets

calendar

Extra storage

Powered desk for additional tech needs

Adjustable chair

Organization tools

References/Inspiration

Employee belongings

Employee owned technology

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CREDITS

THE EFFECT OF INDIVIDUALIZED WORK SETTINGS ON PRODUCTIVITY AND WELL-BEING

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Perkins Eastman