

WORKSPACE DESIGN FOR CREATIVITY, COLLABORATION, AND INNOVATION: AN EXPLORATION OF THE DIGITAL IMPACT

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Organizations realize that they face an increasingly competitive environment that requires more thoughtful response to workspace needs to support creativity, collaboration, and innovation for strategic flexibility and performance (Anderson, Potočnik, & Zhou, 2014; De Paoli, Sauer, & Ropo, 2017; Townsend, DeMarie, & Hendrickson, 1998). While a lack of institutional guidance can allow individuals to develop their own spaces, workspaces can be actively designed to stimulate, steer, and reinforce the desired outcomes. Intentional design approaches have achieved some consistency across business and industry, yet research results on the outcomes of creative spaces have been inconclusive and contradictory and have not systematically explored how people experiment and innovate within these spaces. Further, the global pandemic has challenged existing assumptions and practices on how to best support and enhance these efforts. And information technology has provided a wealth of only partially explored options in recent years. The purpose of this research is to explore how technology can have and is having an impact on workspace design.

The formal study of creativity has grown from a barely detectable level in 1950 to one that nourishes a curiosity about creativity and innovation for both applied and research-based questions. Two essential elements of creativity are that it be appropriate for the task at hand (e.g., novel, useful, etc.) and that the task is heuristic rather than algorithmic (Sarooghi, Libaers, & Burkemper, 2015). Further, the creative process is driven by the types of problems being addressed, individual aptitudes and preferences, and the phase of the creative problem-solving process in which the individuals find themselves (Amabile, 1996). The creative process is built around ideas of both divergent thinking (March, 1991; Rosing, Frese, & Bausch, 2011), where many spontaneous, free-flowing, nonlinear ideas/solutions are quickly generated to address the problem or situation under consideration, and convergent thinking (March, 1991), where the goal is to quickly organize the identified possible solutions, refine them, evaluate the alternatives, and work toward a single, 'correct,' unambiguous answer.

Research on creativity and innovation has shown that the process is more complex and multi-faceted than one that resides primarily in very talented individuals (Amabile, 1996; Csikszentmihalyi & Sawyer, 1995), for it can also have social, organizational, and societal implications for organizational performance and long-term success (Amabile, 1996; Amabile, Conti, Coon, Lazenby, & Herron, 1996; Csikszentmihalyi, 2007; Mumford, 2012). One area of recent emphasis has been the design of collaborative workspaces to stimulate and encourage interaction among employees with the hope that the interactions will amplify the generation of creative and innovative opportunities as a potential source of competitive advantage (Anderson, et al. 2014; Barney, 1991). This is especially true with the growth in Agile development (with its strong emphasis on team interaction and

collaboration) for software and other IT products. For example, workspace that facilitates social interaction, conversations, and even unplanned encounters may best support divergent thinking. This has been the emphasis of many of the workspace design efforts (Dul & Ceylan, 2011; De Paoli, Sauer, & Ropo, 2017; Young, 2016). Workspaces that support quieter, individual work may best support convergent thinking. A meta-analysis of 52 empirical studies found a strong positive relationship between creativity and innovation, although the correlation can vary across research designs and contexts (Sarooghi, et al., 2015). Interestingly, Diehl and Stroebe (1987) and West (2002) have noted that research consistently shows that the consolidation of ideas and results of individuals working alone consistently surpasses groups who brainstorm together. Yet, Rank, Pace, and Frese (2004) note that idea generation and idea implementation too often remain disconnected from one another. And more recently these “workspaces” have “dematerialized” as virtual environments have become more necessary and popular (Ajzen, 2021).

While issues of workspace design have been considered in some form for many years, the earliest formal efforts were in the late-19th and early 20th centuries with the advent of Taylor’s ideas of Scientific Management and Fayol’s general principles of management. These spaces were designed as rational, high-precision environments for managing large volumes of data, echoing the hierarchical structures of classic management theories and they were closely linked to the state-of-the-art technology available at that time, i.e., work spaces were often built around the increasing mechanization and routinization of manufacturing work. The continued evolution lead to workspaces free of dividing walls (i.e., the open-floor plan), an ‘ideal’ approach for organization the flow of work, is dated as having been ‘invented’ in post-war Germany in the 1950s (Kohlert & Cooper, 2017), although earlier examples exist (cf. Frank Lloyd Wright’s Johnson Wax building, 1936; the journalists’ work area at a newspaper; etc.), that epitomize this approach.

Workspace issues started to gain in importance as work was continuing to evolve toward a white-collar workforce that processed vast amounts of data into information. This is indicative of the transition toward “knowledge Work” that was occurring in the middle-to-late 1950s (Antonelli, 2001; Drucker, 1959). The interiors of the Union Carbide Building in New York City (1960), often held up as an example of the state-of-the-art in interior design at that time, was planned “as a study in precision” with the individual subordinate to the “exquisitely detailed expression of utility, efficiency, and modernity” (Antonelli, 2001, p. 27). Antonelli (2001, p. 18) even described knowledge work as “truly weird.”

By the mid-1990s, some organizations were more consciously exploring opportunities to use interior design (i.e., workspace design) to encourage individuals to interact and connect more in their work. For example, Chiat/Day (one of the most successful advertising/design companies of the 1980s and 1990s), in their New York office (in 1995), developed a space where there was ample state-of-the-art technology to support work activities, but there were no individually assigned workspaces. This evolved to an environment with a wide variety of workspaces, yet still allowing for the interweaving of spaces that were “fun” and “had a sense of humor” with offices that supported many of the more traditional characteristics of privacy, ownership, image, and efficiency by 1998

(Antonelli, 2001, p. 34). And as information technology has grown more powerful and software more capable they have become omnipresent in our work and workspace design decisions.

In the early 2000s the open plan had become the design of choice for many organizations in the U.S., beginning first with technology startups and eventually extending into many established sectors (Antonelli, 2001). Perhaps ironically, the young startups and tech firms that led this trend initially sought out inexpensive spaces for their fledgling companies, often working in no-longer-used warehouses and manufacturing spaces consisting of wide, open floor plans. This may be related to the concept of ‘Incubator Space’ (i.e., an innovation space) which emerged in the last few years as a type of space geared for young, dynamic entities to use. And traditional corporations are now often creating similar spaces distinct from their typical work environments to grow ideas and ‘incubate’ innovation; they seem to be saying that innovation and change take place in a different work environment than a typical office space. The success of many of these organizations, and the types of interactive work and innovative cultures they tend to exhibit, has had a dramatic influence and has altered thinking about workspace design. However, reports of discontent with open office designs began to gain traction due to noise levels, distractions from nearby activity, a lack of privacy for some activities, and limited space in which to perform some work functions.

Some workspace designs are successful, yet many organizations have moved into new facilities only to realize that the kind of human interaction desired is not present (Farson, 2008). Mau (the Founder and Creative Director of Bruce Mau Design) has suggested that many perceive architecture as “hardware” (NBBJ, 2006). This misperception has contributed to the challenge of creating appropriate workspace design.

But Kohlert and Cooper (2017) note several efforts at improving performance by stimulating interaction with workspace design. Examples include Steelcase, Zappos, IDEO, The MIT Media Labs, the coffee-shop vibe (e.g., Starbucks, Caribou Coffee, etc.), WeWork (at least in its original incarnation), among others. Unfortunately, many of these examples have been difficult to duplicate in other situations and organizations.

The COVID-19 Pandemic has created a new set of challenges and opportunities for considering workspace design and its integration with new and emerging creative and collaboration technologies. The work environment (as well as our personal environments) has advanced through the necessity of embedding and more extensively using technology to support our creative, collaborative, and innovation-focused activities. But it is not clear what the salient aspects of technology are for adequately and successfully designing and developing workspace to support these types of activities.

This research-in-progress is focused on exploring workspace design and how it can better support creativity, collaboration, and innovation, especially with the wide array of technology options that may, or may not, provide significant benefits. This growing emphasis on the workspace is being enhanced by emerging technologies as they allow for new patterns of work and organization, as well as by recent experience. It is a combination of both physical and digital elements which can change both the spatial aspects of work (e.g., individual and collaborative; co-located vs. virtual; synchronous vs. asynchronous coordination). Further, the effects can be intensely personal as jobs are designed and

performed. The spaces being designed should communicate their intended benefit and support the intended work, while remaining adaptable enough to change as needs and tastes change.

For example, teleworking has been a topic of interest at least since the 1990s. The flexibility offered by telework is being driven by globalization, digitalization, and virtualization (Huws, 2014) and is creating emerging and evolving New Ways of Working (NWW) consisting of reconfigured authority and responsibilities, changes in control, and new modes of coordination and collaboration (Ajzen 2021). Changes in business and industry demands, as well as the need for physical distancing in response to the COVID-19 Pandemic, has led to a massive physical change in how we work, i.e., a de-materialization. Remote work and virtual interaction have been the norm for over two years for many people. And many people indicate that they would prefer to not have to return to the more traditional requirements for working in an office environment. While generally successful, it is not clear whether the positive results for creativity, collaboration, and innovation outcomes are sustainable or sufficient. What are the necessary and sufficient conditions and how do these impact the design of our workspace? What is the form of and necessity for re-materialization (Ajzen, 2021)?

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