UNDERSTANDING THE ROLE OF COLOR IN WORKPLACE DESIGN

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ABSTRACT

While much of the literature on workplace design is anchored in performance improvement broadly defined our work presupposed that workplace design occurs in conjunction with organizational change. As such, we looked to map what is it that we know about how workplace design supports organizational change and what the potential design levers are to facilitate effective change. An extensive review of current workplace literature revealed an orientation towards what we termed 'functional design', for example, design solutions that support the way work gets done. While functionality is critical, so is the acknowledgement of the emotional burden that change imparts on its recipients. Typically, change is accompanied by negative emotions and resistance that may slow adaptation and derail change efforts altogether. Thus, we asked whether workplace design could also provide solutions that address the emotional facets of organizational change. Building on design literature that sees design as responsible for creating contexts for positive experiences, we examined the power of color as a design lever for eliciting desired emotions. Specifically we conducted a literature review on the relationship of color and workplace and examined case studies (British Petroleum and Bloomberg LLC) where organizations that attempted change, leveraged color as part of their workplace redesign, to support change goals. Our work offers a preliminary insight into the ways by which workplace design can serve as a context for desired emotional experience in times of change. The shortage of conceptual work and applied research in this field calls for additional effort to enrich our understanding of design's usefulness within a broader organizational context of needs.

Key words: *Design, Positive experience, Emotion, Color, Organizational change*

INTRODUCTORY NOTE ON WORKPLACE DESIGN & ORGANIZATIONAL CHANGE

Workplace design can be thought of as a phenomenon strongly associated with organizational change. Often, organizations attend to the design of their work environment in conjunction with planning and/or responding to a change, which is primarily strategic in nature. Typically such change, imposed or enacted, is managed with the intent to secure the company's competitive position, enhance efficiency and/or build greater capacity for collaboration and innovation to sustain the company's viability. Within this context the question arise as to what role should the design of the work environment play in supporting and further enhancing the efficacy of organizational change.

While change has become a central theme in today's organizations, workplace design literature treats change as a non-problematic contextual factor only briefly discussing ways in which the nature of work has changed over the past decades due to forces such as globalization, new technologies, and the overall increase in competition across industries[i]. Workplace design solutions, it argues, address these changes in contextual conditions to support organizations' needs to adapt and sustain their competitiveness.

To better assess the strength of the workplace literature in offering efficacious design solutions, let's examine some of its propositions. Take for example 'open space' as a design solution attempting to enable emergent interactions and teamwork as a means to enhance cross-boundary collaborations[ii] for new knowledge development (Bencivengn 1998; Stone and Luchetti 1985). Since collaboration within and across disciplines is instrumental to organizational learning and innovation, workplace researchers embrace a variety of open spaces and communal solutions (Lohr, 1997; Kupritz, 1998; Ferguson, 2001; Duffy, 1997; Asirvatham, 1999; Milford, 1997) as design vehicles that enable teamwork, emergent interactions and serendipitous communication among people (Becker and Steele, 1995; Cantrell, 2001; Cohen, 1999; Loftness, 2001; Pollack, 2001;

Degenhardt, 2001). To advance flexibility these open spaces are often furnished with mobile team office furniture that can be configured and reconfigured for continuous interactions (Veitch and Gifford, 1996; Wheeler, 2001; Cruikshank and Malcolm, 1994).

Implicit in this approach is the notion that design for collaboration will lead to greater idea generation, which in turn will support the organization's pursuit of new knowledge development [iii]. While these design considerations are clearly important to servicing the organization's change agenda, they solely address changes in the organization's task requirements while neglecting to address the well being of individuals reacting to, coping[iv] with and participating in the change (Vince and Bourssine, 1996).

Individuals are now asked to function in an environment that has less stability and greater transparency. Increased transparency can serve the work needs associated with emergent interactions and resultant learning, but it can also be threatening and uncomfortable for individuals who thrive in private 'I-spaces' and are less comfortable with the 'openness' that 'We-space[v]' brings. This workplace design solution, while effective in supporting organizational change goals, fails to recognize that employees are being asked to adopt a new work style while simultaneously adapting to a change in working conditions. As such, these design solutions might magnify discomfort and threat instead of easing the transition and supporting the effective adaptation to new work requirements.

Similarly, the continuous abandonment of hierarchical structures (Galbraith, 1995; Ancona et al. 1998) has exposed employees to increased levels of uncertainty (Chan, 2000)). Employees that were always expected to follow within command-and-control relationships are now empowered to make decisions and are held accountable for their results. Expected to assume greater responsibility over their own employment fate, many employees find themselves inadequately trained to act effectively as decision makers and hold themselves and others accountable. Consequently, flattening the organization, while strategically necessary, is difficult to execute effectively mainly because employees may be

uncomfortable with the accompanying empowerment challenges. The discussion of workplace solutions ignores the impact of uncertainty that this change brings to bear on people's *emotional* and *cognitive* states. Instead workplace literature advocates for solutions of the flat, collaborative kind that are aimed to support empowerment.

The question these examples help surface is essentially about expectations. What level of effectiveness can workplace design demonstrate given the change management challenges? Can workplace design be more than a tool to address the functional work needs of an organization's change agenda? Can workplace design make change more manageable, even desired, for the individual?

Clearly the phenomenon of change that workplace solutions attempt to support is dicey and appears far more complex, far less guidable and less manageable than initially thought. This challenging nature of change is evidenced through the majority of transformation efforts that fail to achieve their desired objectives (Kotter, 1995; Beer and Mitra, 2000; Pascale et al., 1997). Research suggests that the failure rate of organizational change programs is as high as 70 percent[vi] (Beer & Nohria, 2000).

Among the prime reasons for these dismal results is employees' resistance to 'own' change and to bear the associated emotional and cognitive burden (Skoldberg, 1994; Huy, 1999; Dirks et al., 1996). In fact, many develop symptoms of anxiety, fear, aggression, confusion, and frustration (Marks, 1991; Marks and Mirvis, 1985; Marris, 1986; Diamond, 1993; Hirschhorn and Gilmore, 1989), which manifest in resistance (Kotler and Schlesinger, 1979) and the increased use of defense mechanisms such as repression, regression, reaction formation and denial (Oldham and Kleiner, 1990). What often results from an emotional threatening and cognitively challenging change experience is a cocooning behavior. (Antonacopoulou and Gabriel, 2001; Seligman, 1974) People withdraw to protect their emotional self and 'display' rigidity[vii] instead of engagement in the change program and commitment to its goals.

Apparently, change is difficult. It triggers emotional and cognitive challenges and it triggers tensions between the attempt to strategically lead change and its emergent nature. The current workplace literature, seemingly oblivious to this complex web of intricacies, assumes a 'functional design' view. That is, it tasks itself primarily with designing work environments that allow *organizations* to change and adjust to their environments and neglect to address the emotional needs of *individuals'* in their effective adaptation to the resultant changing work requirements.

Recognizing that workplace design decisions are often derived from organizational restructuring needs (Vischer, 1995; Sundstrom, 1986), we argue that these design decisions fall short of addressing the complexity of the *change phenomenon itself* (Gulasch, 1998), and specifically its affect on organization members that need to effectively manage themselves and others through the transformation and adapt to new work expectations.

The question we raised examines the possible contribution that workplace design might make in supporting *both* organizations *and* individuals, marrying what Metzger (1963) has termed "Reality1", the reality that is manifested through artifact design, and "Reality2", the one that is experienced and acted upon. Here, the design of work environments is viewed as an opportunity to create a context for positive experiences that can marry changes in the way work gets done with positive emotions that invite engagement and participation instead of detachment and fear.

MANAGING EMOTIONS THROUGH WORKPLACE DESIGN

Evidently, the emotional undercurrents[viii] of change have a profound impact on individual behavior within organizations. Even though organizations undergoing transformation espouse positive pro-change rhetoric, they may evoke emotional dissonance in individuals that need to reconcile their naturally triggered negative emotions of fear and anxiety with the organization's change

hype (Middleton, 1989). Psychoanalysts insist that there is a universally primitive, pre-social, pre-linguistic, and pre-cognitive level of emotion associated with change which might be experienced or repressed, expressed or controlled, dominant or diffused, but never ignored and obliterated (Gabriel, 1998; Craib, 1998; Hopfl and Linstead, 1997). Still, as Fineman (1993) so aptly points out, too often organizations fail to nourish people's psyche and ignore their emotional needs.

The literatures on change and adaptation[ix] (Walsh, 1995; Chan, 2000; Dirks et al., 1996) echo the criticality of *managing emotions throughout change* efforts arguing that change events are regarded as threatening stressors that are often perceived negatively by organizational members (Mossholder et al., 2000; O'Neill and Lenn, 1995; Kets de Vries and Miller, 1985; Oldham and Kleiner, 1990). These literatures view change as *emotionally* charged and challenging to organizations and their individual members, a challenge that threats to undermine the effectiveness of the organizational change effort altogether (Armenakis et al., 1993).

Managing emotions however, especially negative ones, is no small task. Change literature focuses on the 'recipients of change' (Jick, 1993) assuming simplistically that management knows how to treat defense, denial, and anger. In reality as the literature on Emotional IQ suggests, managers have substantial limitations when attempting to effectively manage people's emotions. Research by the Center for Creative Leadership found that the primary cause of derailment in executives involve their deficits in emotional competence. The three primary causes are: difficulty in handling change, not being able to work well in a team, and poor interpersonal relations[x]. Perhaps it is not realistic to expect mangers to effectively manage individual emotions?

Our examination of the potential of workplace design to address both organizational and individual change needs and challenges builds off contemporary thinking in the field of design as creating *contexts for experience* where the user is seduced to experience the designed object or reality with all his

or her senses (Overbeeke et al., 1999). By designing *contexts for experience* instead of products, objects and/or environments the focus shifts from the result *of* interaction towards the involvement *in and during* interaction (Hummels, 1999). This person-design interactive experience is *affective* in nature and involves a great variety of emotions.

While the design literature celebrates and advances the design-emotion paradigm the term 'emotion' is problematic in that it is used too loosely or freely. The result is multiple conceptualizations of 'emotion' and little consensus regarding its definition[xi]. In general, the literature on emotions is divided into two broad schools, highly heterogeneous in themselves, that debate whether to conceptualize emotions as anchored in dimensions (Wundt, 1924; Masson & McCarthy, 1995; Watson, 2000; Damasio, 1999; Johnston and Scherer, 2000; Cosmides and Tooby, 2000) or to see emotions as discrete categories (Lazarus, 1991; Plutchik, 1962, 2001). Despite this divergence, Plutchik rightfully points to some emergent consensus: emotions are usually triggered by one's interpretations of events; they involve strong reactions of many bodily systems; they communicate information from one person to another; and they help the individual adapt to changing environmental situations (Plutchik, 2003).

By focusing on how organizational members experience the workspace they inhabit, workplace design may create a context for desired emotional experience that supports people in managing their organizational change experience along with the organizational change goals.

> What is the role that emotion should play in our approaches to design? "How do we design for emotion?" Good question, but it implies that one can identify emotion as a design target, then craft an artifact (an application, a device, a thing, for example) that meets this target.
>
> Don Norman, Symposium on Foundations of Interaction Design, 2003

But how is the potential to create a context for positive experience unleashed? How is a desired emotional experience generated through workplace design? Desmet & Hekkert (2001) argued that of all affective states or experiences, the

emotional experience is the most relevant for understanding product (or designed) experience because only *emotions* imply a one-to-one relationship between the experience and the object. If a design looks or performs in a way that corresponds with a concern of the individual, a pleasant emotional response will result and conversely, if it conflicts, the emotion will be unpleasant. Designs evoke emotions when they are perceived to touch upon individuals' concerns or preference (Frijda, 1986; Reeves & Nass, 1996).

As design creates a context for experience for individuals who interact with that design[xii], the resultant emotions may enable or hinder adaptation to change. Framing the connection between positive emotions and adaptation to change Fredrickson (2000) develops an insightful argument emphasizing the significant role of positive emotions (specified in Fredrickson's research as joy, contentment and interest[xiii]) in broadening a person's thought-action repertoire and building that individual's enduring personal resources. It is these same personal resources that served the ancestral function of promoting survival. Fredrickson provides a detailed account of the relationship that exists between negative emotions and the narrowing of one's thought process and action repertoire. In contrast, she points out that positive emotions may improve the ability to generate creative thought, develop relationship with others, and over all perform at a higher level. Lastly, Fredrickson proposes that positive emotions have an undoing effect on negative emotions. That is, positive emotions can counter the negative emotions associated with change and may enable creative thought, which is critical to the ability to learn and effectively cope with change.

Supporting Fredrickson, Norman (2002) argues that positive affect enhances creative and breadth-first thinking, whereas negative emotions focus on cognition, enhancing depth-first processing and minimizing distractions. Therefore, Norman continues, it is essential that products/objects designed for use under stress follow good human-centered design, for stress makes people less able to cope with difficulties and less flexible in their approach to problem solving. Instead, positive affect makes people more tolerant of

minor difficulties and more flexible and creative in finding solutions. Thus, Norman concludes, just as negative affect can make some simple tasks difficult, positive affect can make some difficult tasks easier, and both affects can be triggered and/or facilitated by design.

Furthermore, Isen (1993) also showed that the positive affective system changes the cognitive parameters of problem solving to emphasize breadth-first thinking, and the examination of multiple solutions and courses of action. Conversely, anxiety has just the opposite effect: it biases the processing to be depth first, focused, concentrated and overall it narrows the thought process. In general, negative affect enables focus upon a specific threat or problem, but it prevents the adaptive and creative problem solving that is usually required under conditions of change and uncertainty (Mills and Kleinman, 1988). Evidently, the relationship between positive emotions and adaptation to change appears powerful, and the thought that such association can be triggered by designing workplaces that serve as context for positive experience is of even greater interest. Cupchik notes:

> Design also has an aesthetic side to the extent that the form of tools or images embody sensory qualities that shape experience and are related to each other in a coherent manner. This is a bottom-up process in which sensation is valued in and of itself (i.e. intrinsically) and not because it conveys information related to the practical (i.e. extrinsic) use of the instrument." (p.5)

And so, if emotions can be influenced by the deliberate design of contexts for experience[xiv], and if such design outcomes are critical in times of change, what particular levers can designers employ to carefully structure the desired positive emotional experience? Workplace design theory offers very little insight into how such positive experience is created. Indeed, designing a positive context of experience is assumed as a non-trivial challenge.

Looking into design levers at a designer's disposal we note key levers such as point/line, form/shape/space, movement, color, pattern and texture (Pile, 1988). Of these six design levers, we ask if any one stands out as the lever more effective at engaging individuals and impacting emotions. Researchers suggest

that color is a strong lever and that color provides the fastest track to emotions (Baker, 2004). Those who do not share this view, such as Willats (2004), who suggests that shape is more important than color, still acknowledge that other design levers, shape included, lack the expressive vocabulary that color enjoys, as well the stronger research-base for understanding colors' association to emotions. Willats says:

> Shape and color are two key factors in design, and in order to think and talk about the shape and color of a product during the course of the design process effective ways of describing both are needed. A comprehensive vocabulary for describing color is available and there is a well-established link between color and the emotions. But what words can be used to describe shape, and are there particular emotional responses to different kinds of shapes? (p.180)

Research on color and emotion began as early as the late 1800s (Fehrman & Fehrman, 2004). Researchers at that time thought that the emotional connection to color could be one means to understand individuals' preferences. Early studies centered on determining exact color emotion connections using a defined color set, for example red, yellow, blue, green, and a defined emotion set, for example anger, joy, happy, and sad. Studies varied greatly in size with a range of 6 to 48 emotions per set. More recent studies have tried to reduce the large numbers of color-emotion scales to smaller groups in an attempt to facilitate comparisons across studies (for example the work of Kwallek et al., 1996).

Over the years, color studies have grown to include a wide range of contexts including pharmaceutical (Formosa, 2004), lighting (Mead, 2004), materials (Mottram, 2004; Zuo, Hope, Jones, & Castle, 2004) and textiles in relationship to office furniture (Mottram, 2004). Perhaps the most relevant contemporary work today is that of Mahnke (1996) and Mahnke & Mahnke (1993), which specifically address color-emotion associations within the workplace. Let us explore in greater detail, the power of color as a design lever.

LEVERAGING COLOR TO CREATE A CONTEXT FOR POSITIVE EXPEREINCE

Color does not add a pleasant quality to design - it reinforces it!
(Pierre Bonnard, French post-impressionism painter, 1867-1947)

Searching for design levers that promote positive affect Mahnke (1996) discusses, in great detail, the affect of *color* and light in designed environments on the inhabitants' emotional well-being. Mahnke presents his and others' color-emotion association studies[xv] and points to the significant relationship between specific colors and specific emotions. For example, his summarizing discussion of the color Gray suggests that:

> Pure Gray is conservative, quiet, and calm, but also dreary, tedious, passive and without life…in the Gray zone there is no clarity in any direction – it is neutral…Gray lacks energy; it has no will of its own. It does not want to get involved and make any definite statement. In color design it takes on the characteristic of the adjacent color (p.66)

Yellow however enjoys a very different set of characteristics:

> Reflective and luminous, Yellow is the happiest of all colors. In its positive associations and impressions it is cheerful, high-spirited, and suggestive of the life-giving sun. It represents a bright future, hope, wisdom and it is expansive -not earthbound… Yellow is used in packaging and advertising to express activity and cheerfulness (p.67)

While Yellow is associated with happiness, Gray is correlated with mourning and sorrow across a number of studies. Why, then, are the offices of the corporate world so heavily decorated with Gray? What affective experience is created by totally 'Gray-ing' cubical walls and office furniture[xvi]? While we can intuitively gage the answer to such a question, not much empirical knowledge has been developed in this area thus far:

> Less research has evaluated the indirect impact of environments of different colors when individuals are working on specific tasks as opposed to viewing or observing the environmental color (Stone, 2003, p.65)

Research shows that persons subjected to under-stimulation exhibited symptoms of restlessness, excessive emotional response, difficulty in concentration, irritation, and in some cases, a variety of more extreme reactions

(Mahnke and Mahnke, 1993).At the same time, totally 'de-Gray-ing' the workplace may not be the solution either. Kuller collected measurements during the 1st, 2nd and 3rd hours of exposure to a multi-color environment and found that subjects generally experienced a lack of emotional control in a colorful room. Subjects EKG (heart rate) was slower in the colorful room than in the Gray one, which is in agreement with a hypothesis of other researchers (in Lacey et al., 1963) that intense attention might be accompanied by cardiac deceleration. Mahnke and Mahnke write:

> It is especially interesting to note that brain-wave activity was lower in the colorful room than in the gray room and the heart response was slower in the colorful room. Therefore, we may conclude that a dull environment tends to prod brain activity, which may induce anxiety, fear and distress (1993, p.6).

The importance of color was recognized in a survey conducted by Avery Office Products in the UK in 2004[xvii]. This survey found that over 60% of British businesses believe they can improve staff morale and motivation by adding color to their work environment. Specifically, the survey found that only 11% of the 1000 office workers surveyed 'enjoyed' working in cream, beige, or brown office environments, when 38% of offices feature these colors. Of the respondents, 88% claimed more vibrant colors would improve morale, efficiency, and performance. More specifically, 20% would prefer light blue, 13% would select light green, and 16% would prefer yellow to increase their morale and overall performance. All of the respondents preferred colors somehow linked to nature and renewal. While these results are clearly important in the support they provide to color design decisions, very little of the 'intuition' recorded in this study is backed by empirical research. In fact, when looking at Kwallek et al.'s findings (1996) the picture is further complicated.

These researchers studied the impact of interior office color schemes on employees' mood and performance. Six hundred and seventy-five subjects were asked to perform clerical work, like proofreading, while situated in offices painted with different colors. Findings from the study suggest that overall

subjects made significantly more errors when working in a white office than in red and blue offices[xviii]. Gender differences were also noted whereby females performed significantly better than males irrespective of office color but also experienced more depression, confusion, and anger when working in white, gray, or beige offices. Males, on the other hand, reported greater depression confusion and anger in high-saturated office color (green, blue, purple, red, yellow, and orange). Interestingly, when asked, subjects preferred working in beige and white offices and were not interested in working in orange and purple color offices.

In a consecutive study Kwallek et al. (1997) tested 90 workers' mood and productivity in three office color schemes including bright red, light blue-green and white. Subjects were randomly assigned to one of the three offices and were asked to perform a variety of office tasks throughout a four-day-eight-hour workweek. Performance results and mood were carefully monitored. Results showed no difference in mood and/or performance level for subjects assigned to different color office. Only when researchers factored in pre-screened individual differences in ability to screen irrelevant environmental stimuli, did color mattered. Kwallek et al. concluded that introducing color to work environments to enhance productivity and mood might be difficult and risky as its impact is likely to vary from one employee to another:

> Attempting to create the ideal environmental ambience through interior color across all individuals who may differ in several pertinent characteristics may be impossible. Alternatively interiors could be designed with maximum flexibility to allow for variation within the same general space according to each individual's relevant characteristics (p.131).

While Mahnke promotes color-in-workspace as a way of influencing employees' emotion, Kwallek et al. (1997) emphasizes individuating color selection to generate the desired emotional experience. Despite divergence in orientations, both studies acknowledge the power of color, as a design agent, to elicit individual emotions[xix]. Further support is received from Schauss' (1985) study that found aggression to decrease in pink rooms. These findings align with recent research on *color as an emotional language* (Lechner & Harrington, 2005)

centered on the premise that color carries a consistent set of meanings similar to any other linguistic instrument. In an empirical investigation of a U.S. based sample, subjects clearly associated emotions to colors in consistent ways leading the researchers to propose that *color is a language of emotions*.

Overall, research suggests that color influences subjects psychologically at an affective level (Birren, 1950; Goldstein, 1939), impacting how we feel and consequently, how we act (Birren, 1978). Employing color to design workplace environments that serve as context for positive experiences seems particularly important in time of organizational change where positive experiences are so critically needed, and yet very difficult to generate. The following case studies briefly document two companies' story for change and their use of workplace redesign and color-work to affect the desired change:

CASE 1: BLOOMBERG LP

Business:

Where would you go for timely and relevant financial information? Bloomberg's Web Site, www.bloomberg.com, is among the five most visited sites for financial news on the web[xx]. Founded in 1981 by Michael Bloomberg, current mayor of New York City, Bloomberg L. P. is a privately held leading provider of real time and historical financial data. With 8200 employees worldwide supporting the investment decision needs of a global customer base of professionals who operate in 126 countries, Blumberg offers a 24/7 service of financial communications bundling data, news, analyses and multimedia reports. "We follow the money trail better than any other news organization", Bloomberg says about itself![xxi]

With complementing lines of business including global financial news, magazine and book publishing, 24-hour business and financial news television, worldwide up-to-the minute business, national and international news radio broadcasting, and Internet operations Bloomberg growth as a Financial information company was impressive and steep[xxii]. In a short 24 years it was able to solidify a global presence and position itself as a leading brand in the financial service industry typically ruled by icon-like powerhouses such as Goldman Sacks, Merrill Lynch, Citigroup and others. How was Entrepreneur Bloomberg able to grow a company from a one-room 7 person operation in 1981 to a multi-billion global employer of over 8000 professionals spread over more countries than McDonalds[xxiii] ?

Bloomberg prides itself on being a dynamic, innovative customer-centric company. Investing in people and creating an open communication environment

are central tenets to Bloomberg's success[xxiv]. Innovation and creativity, and tolerance for failure are highly valued[xxv]. With no job titles, no individual or corner offices, no mahogany walls and expansive desks people are encouraged to interact, engage and exchange constantly with one another. Routines are bashed as the enemy of fresh thinking or in Bloomberg terms "Pattern Interrupt by CEO" – once a pattern or a method is established the CEO would jump in to interrupt it and ensure that no complacency has settled in.

Headquartered in New York City, the Bloomberg offices grew to support the fast-tracked growth of the company and by 2000 they were spread along Park Avenue locations generating real estate cost and synergy lose. A decision was made to consolidate all business lines under one roof. A new facility was to be designed to host the new HQ home for the company. It was to be a beautiful inspiring space embodying the Bloomberg values of creativity and innovation, open timely communication, equality, transparency, and collaborative work style where employees and customers would be energized and engaged, proud to be part of the Bloomberg family.

Design:

Like our company, our offices work under a different set of rules. They are designed to reflect the energy and fluid transfer of ideas that have driven our company since the early days. Large aquariums lend color and light to open spaces — spaces filled with progressive furniture and contemporary art. Our reception areas feel like cafes, 24-hour meeting and eating spaces, where our people and visitors can get together over free food and refreshments [Company website www.bloomberg.com]

Studios Architecture was contracted to work together with Bloomberg in-house design team to make the new HQ reality real. This was the first time where inside Bloomberg architects were so deeply involved in the design of the base building that hosts the office. The close collaboration between in-house and contracted architects allowed for the value-based design to emerge. Bloomberg culture was the driver for the design, note the architects. The culture of openness, transparency, and creativity required a design that will allow for emergence. Furthermore, the fast growth of the company also required designing for flexibility.

Not only did we need to create a space that can host about 3,600 employees from various functions with different work needs but we also needed to create a flexible transparent dynamic engaging environment that can support future growth [project architect]

Designing a home for Bloomberg's activity set was challenging. There is "one of everything in this place"; a sound studio/stage TV facilities, training facilities, 24/7 video conferencing, massive information data flow, technology media streams and communication platforms. The art was to find a design that can bring all these functions together so that synergy can be achieved, by design.

Transparency became the design theme. Can the organization see all that it has here; the people, the resources, and the information they provide? The architects worked to strip out the walls and pared partitions down until they were

left with only the essential must-have elements. Glass walled breakout spaces were added in corner areas of all open spaces to allow for chance and planned encounters to materialize into collaborative work. The building's design (by Cesar Pelli & Associates) is amazing in its use of angle facades to allow a visual path to any and every floor. Transparency was achieved. With a see-through floor design, the architects turned to tackle the next challenge – design for creativity and innovation. Mirroring the emergent nature of out-of-the-box thinking, the central lobby became central to forcing interactions. Elevators were programmed to only stop at the Sky Lobby 6th floor. Staircases and escalators connect between all other floors and force emergent interactions between people who otherwise would get off the 4th or the 7th floor and would never bump into each other.

Flexibility was achieved through the design of a smart 4,000 desk system. The key challenge was to be able to change fast providing a plug and play solution. To be able to move a whole department in hours to accommodate the changing needs of the company the desks were designed so that each employee can take their movable pad and personal belongings and move to the newly assign 5' desk space on any of the eight floors in minutes.

To celebrate the Bloomberg community the 6th floor pantry is equipped with curving sofas, orange bins stocked with free snacks and beverage and chrome countertops with communal terminals that provide e-access. The pantry area is also adjacent to the elevator stop, the single point of entry to all Bloomberg employees and visitors. As people congregate in this area to chat and grab a snack a sense of togetherness is established and experienced. This sky lobby also serves as a stage to showcase Bloomberg business essence. The floor-through flat-panel displays that engulf the space provide omnipresent "media stream" where relevant financial information from all markets Bloomberg reports on is shown in real time creating an information experience that best embodies what Bloomberg is all about. Media walls are also present throughout the floor replacing traditional bulletin boards featuring company information.

Color is used purposefully and effectively around the facility as a signaling and way-finding system for both function and activity type. The Digital Media stream employs color codes to support information transmission using black and white for news similar to news print, green for market indexes when the market is up and red when down. A similar color scheme is used for elevator lights. Placed above the elevators are big light boxes that shade green for going up or red for down. The environment, when not colored with lights or materials, is neutral designed in white and gray – colors selected for their reflective quality allowing other colors to be magnified and ever changing. Red-glassed conference rooms on each floor are located in the exact same place – providing a vertical visual element to tie floors together. Blue shows as a consistent color theme on all floors and is used to direct the eye to information spaces – a trough of blue light floats through the vast open office spaces ceiling. Orange is considered the Bloomberg corporate color and as such it is saved for special places – like the "knife blades" that slice vertically thought the glass building near the entrances. Color also comes from the terminals where the screen savers are designed to impart and continue the color flow in what would otherwise be very sterile white

vast spaces. Color is deliberately selected to reflect the inherit energy of the company.

CASE 2: BRITISH PETROLEUM - "BP WOW"

Business:

Born in May of 1901, British Petroleum [BP], One of UK's leading companies, grew to become a global energy group present in 100+ countries and an employer of over 100,000 people. With intensified proliferated growth, fierce competition, tremendous change in the oil and gas industry and emergent global concerns about the use of natural resources, BP found itself at the forefront of social and business dilemmas needing to manage cutting edge innovation to advance energy production with operational excellence to generate appropriate societal value. BP needed to grow a great degree of business sophistication to best manage itself as an energy group. Not only was it necessary to develop and execute acquisition strategy to keep the company pump-share but it was also essential to keep evolving the knowledge and competencies in complementary domains such as solar and alternative renewable energy sources.

For a power-house like BP to sustain its top player position, a multi-talented crew had to be assembled to provide back stage support. And indeed BP showed not just leading engineering capacity but also tremendous brand intelligence as it re-branded itself post the Amoco acquisition in summer 2000 using a new flower-like Helios in green white and yellow colors to indicate its socially responsible greenery approach:

"We also believe it will greatly strengthen the sense of identity and common purpose of our 100,000 staff in more than 100 countries on whom we depend to produce and distribute those products and services in a way that meets our aspiration to be a progressive, responsible company." [BP Amoco chief executive Sir John Browne]

But BP's efforts did not stop at branding. Instead this and many other initiatives to improve BP's global capacity were also coupled by a concentrated effort to study the future workplace environment to best prepare BP for using new technologies, furniture and design concepts in their ever changing lab environment to support collaborative innovative performance.

Designing 'green offices' that are environment-friendly, reducing energy consumption and supporting sustainability, while providing a positive healthy context that contributes to stress reduction became one of BP's centers of attention. Such office design should promote innovative thinking while also cater to demographic changes in workforce makeup offering comfort and safety conditions to 'third agers' and sophisticatedly approach the global-local workplace standards and designs.

Gensler architects were contracted to work with BP's Global Property Management & Services (GPM&S) to *Create a safe, highly flexible, and technology enabled new work environment that meets both the operational and developmental needs of GPM&S today and into the foreseeable future [Project architect]*. GPM&S as the function responsible for engineering work

environments for others within BP were using themselves as the Genoa pig to test workplace solutions that work and those that are likely to fail so that later they can become better advisors to the BP community on office design matters.

Design:

BP's Global Property Management and Services group is tasked with supporting all BP business units' needs from facility design to business practices. As such this group is responsible for coming up with new ways of working in BP. In 2002 BP and SUN had a workshop about envisioning new workplace settings and through conversations the concept of 'Blue Chuck' was born [named after the restaurant where it was first aired]. 'Blue Chuck' stood for breaking down barriers for communication introducing transparency through design, and insisting on proportionate share of collaborative interactions. GPM&S was made responsible of convincing BP employees that although nested in a traditional industry they would have to get out of their individual spaces and collaborate with others. BP Wow space built for GPM&S started as an idea:

These people are so used to work as individuals and now need to learn to work together and make decisions together. The whole change management equation is so difficult. So the group decided to experiment on themselves first to see how collaboration can work there – Wow started as an experiment to see how physical work settings and a variety of latest and greatest technologies can complement and enable collaborative work [Project architect]

Gensler architects were asked to develop a pilot program for a living laboratory where office furniture and working-together configurations can be tested including angled furniture instead of the traditional panel systems, semi enclosed conference areas, height and size of barriers and dividers, transparency level, color and lighting conditions and so forth.

The idea was that we would build this out and also design some areas that can be pushed into failure to see what doesn't function [Project architect]

While the 'Blue Chuck' concept promotes transparency and open 'wall-less environment' one of the questions wrestled with referred to designed solutions for meeting areas. One novel concept tested for a meeting room was called 'The Bubble', a meeting space resembling a white tent made of a stretched fabric over a metal cage.

We wanted to test this as an idea of what makes an enclosed room and how much closure does one need to feel in a meeting room – for that space to function really well as a conference meeting space

The colors for BP Wow were selected based on the brand palette as all BP locations have to manifest the brand and thus follow a predetermined set of colors so when people come onto the floor they recognize it as a BP floor. In addition BP's brand is strongly focused on sustainability and so color and material selection had to correspond to sustainability principles. Muted colors from the brand color family were chosen to best embody the BP brand-personality. Bright colors were selected to support way-finding and signal specific areas on each floor.

WHERE DO WE GO FROM HERE? CONCLUDING COMMENTS

So far we argued that an organization experiencing the impetuous to change might, as part of its strategic response, restructure its organization to support new directions. Restructuring can take many forms, for example, increasing collaboration among participants delaying the organization or downsizing and streamlining operations. Regardless of form, restructuring will always entail a change in how people work with one another and how they relate to the organization. Within this context workplace design solutions are often introduced to support and make this change more effective (Vischer, 1995; Sundstrom, 1986). However, change is stressful and emotionally difficult for people in an organization, an issue critical to the success of any change program, yet largely overlooked in the workplace design literature.

While products and brands begin to leverage design to elicit positive emotional experiences (Gobe, 2001; Robinette, Brand, & Lenz, 2000), workplace design is still rooted in its 'functional design' orientation. Lyytinen (2004) gives insight into the insufficiency of the functional design approach. He points to Webster's definition of Design as "(1) to make preliminary sketches, sketch a pattern or an outline for; plan, (2) to plan, carry esp. by artistic arrangement or skillful way, (3) to form plans in the mind, contrive (4) to plan to do, purpose, intent (5) to intend to set apart for some purpose". In these definitions, Lyytinen argues, design is looked at as a human activity that is purposeful, future oriented, conceptual, analytical and overall, it enjoys great generality.

Lyytinen points out to the deficiency of design, of workplace or other, as a lever capable of imposing control over an emergent social reality. Similarly, workplace design places conscious constraints to affect change in the way work gets done, vis-à-vis the change goals of the organization. But within these constraints, a social reality, which we postulated to be primarily emotional, emerges and it may not support organizational change goals especially if the

emotions are negative. While the design community sees design as creating contexts for experience, how does it design contexts of *positive* experience?

The Bloomberg Company has made the new facility a change agent carrying its brand image and massage of growth, and cutting edge innovative services to clients, Wall Street, and internal constituencies. Adding to the symbolic and functional value obtained by sophisticated design the significant use of color, emotions are kept high and positive as people keep experiencing the energizing inviting nature of the space. The use of design lever such as glass walls, open and communal spaces, and staircases to connect the floors all generate a 'futuristic experience' that demonstrate the Bloomberg brand promise of innovation. The culture of transparency, immediacy, and collaborative relationship is well supported and manifested through the design. The massive flexible space signals the growth strategy that the company assumed. The vibrant colors radiate energy, pace, and newness embedding and invigorating the brand spirit. Overall this change initiative was well received by the 'Bloombergies' and is regarded successful in as much that it meets the change goals pursued.

BP's experimentation with the new GPM&S workspace was well received by the employees. The new design allowed for testing of various arrangements and work-station solutions. Experiencing the change of workspace first-hand allowed GPM&S employees to become educated providers of office solution service to the BP community at large. While color selection was limited to the brand palette, the use of color lighting through color blasters was well received and was regarded a design element that promoted engagement and energized employees throughout the work-day. Leveraging the brand colors to make the space 'BP-standardized' was well regarded and enhanced brand pride and brand promotion.

Reviewing the various design levers that may be potent in creating contexts for *positive* experience, color stands out as facilitator of emotions. The color-emotion literature, however, is weak and inconclusive with regards to color selection for particular desired emotional states, and for the most part it does not

show how color is utilized to actually affect or support change in individuals. Furthermore, this literature is confused and thus confusing when addressing the universality of color impact. Specifically, it is unable to determine whether color in the workplace should be customized to support particular individual preferences, or support a universal palette, given that specific colors in this palette are known to promote innovative-creative thinking or other desired change goals. The notion that color cannot be uniformly associated with particular emotions, as Kwallek's study [1997] shows, makes the question of how color can be leveraged to affect contexts for desired positive experience a challenge that requires further research. We recognize that color-emotion theory, especially the subset that pertains to color and workplace, is in its infancy but also point to a consensus emerging about the potency of color in affecting the emotional states of individuals. Additional research is needed to better understand the universality of color's influence as well as its specific association to emotional states within the workplace.

To conclude, the workplace design paradigm in its current state provides tremendous functional support to organizations as they undergo change. Its contribution might be further enhanced if it broadened its perspective and addressed the emotional needs triggered by the change in the way employees are expected to work, offering high-touch solutions rather than providing only high-tech (Domzal & Unger, 1987) functional ones (see Appendix A below for conceptual model). We argue that workplace design can generate "persuasive artifacts" (Latour, 1987) that invite people to engage in an experience, stimulate their interest and imagination, and facilitate and accommodate their contributions (Wagner, 2004). Because organizations are human and not machine-like, change cannot be driven beyond the organizational members' ability to participate. Designing work environments supportive of organizational change is, in effect, designing a context of positive experience for the members of this organization.

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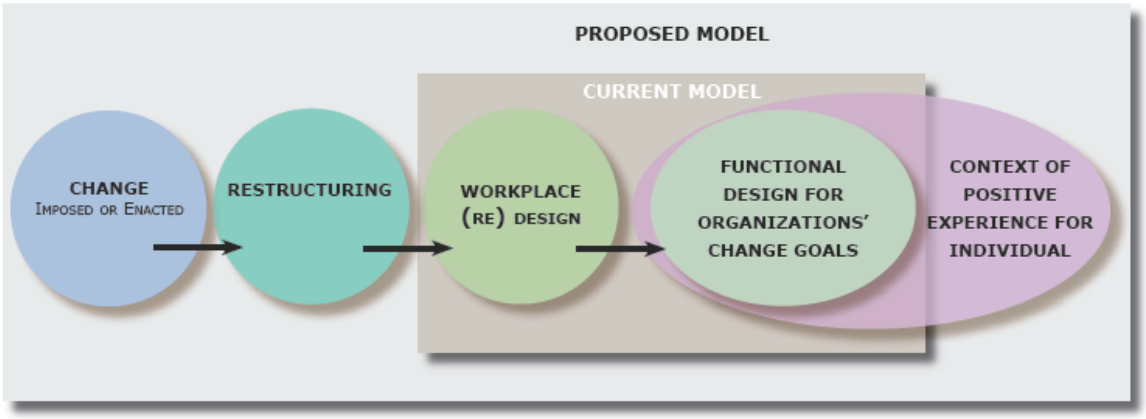
APPENDIX 1 – CONCEPTUAL FRAMEWORK



[i] For example, "Uncertainty is endemic and chronic in today's organizations. The reasons reveal themselves in daily newspaper and TV headlines: mammoth mergers and acquisitions, technology that changes with anxiety-provoking speed, a labor force for which demand greatly exceeds supply for qualified workers, fierce and unpredictable global markets and competition, and new products and services lead by e-commerce that rewrite the rules of the game with dizzying speed. All of these factors force organizations to rethink how they do business: how they manage their business, where and when they convene workers, and the manner in which work is done" (Becker and Sims, 2000:5)

[ii] For example a 2002 award-winning facility, the Multi-use Center in Auckland NZ was designed to increase communication between call center employees in the information-system operations. Business units are spread out over 5 zones on three floors in the open-concept space. "The plan organizes around a central common area for meeting, work, and social gathering. The 'central' park idea and café are the hub for the office community…post occupancy evaluation has shown an increase in verbal communication, staff turnover reduction of 50% and a 10-15% faster software development delivery" (Kolleeny, 2002)

[iii] See Nonaka and Konno's discussion of the concept of 'Ba' (1998), a shared space for emerging relationships, where knowledge conversations can take place and consequently new knowledge can be created.

[iv] Here, coping with change is defined as the exertion of behavioral and cognitive efforts to manage the internal and external demands of relationship with the environment that tax or surpass the person's resources (Folkman et al., 1986).

[v] I-Space and We-Space is terminology used by Steelcase (http://www.steelcase.com) to profile the various work needs of companies. I-space refers to individual workspaces while We-space refers to team and communal work environments.

[vi] Beer, M. and in Nohria, N. 2000. Cracking the code of change. HBR May-June, 133-141

[vii] Threat-rigidity thesis is based on research showing that when faced with threatening conditions, change included, individuals regress to behave in a rigid way, relying on well known behaviors or dominant responses, restricting their behaviors and shutting their emotions downs (Ocasio, 1995; Staw et al. 1981)

[viii] While the term 'Emotion' enjoys multiple definitions and views (see for example the works of Plutchik, 1962, Farijda, 1986, Lazarus, 1991) we follow Farijda's, 1986 definition according to which emotions are tendencies to establish, maintain, or disrupt a relationship with the environment. Emotions might be defined as action readiness change in response to emergencies or interruptions

[ix] These fairly elaborated literatures can be found within various psychoanalytic and social psychology schools but rarely has their voice echoed in the business change management literature.

[x] http://www.eiconsortium.org/research/business_case_for_ei.htm

[xi] William James, 1884: "My theory is that the body changes follow directly the perception of the exciting fact, and that our feelings of the same change as they occur is the emotion" (p.204)

Sigmund Freud, 1915: Ideas are cathexes – ultimately of memory traces – while affects and emotions correspond with process of discharge, the final expression of which is perceived as feeling.

Robert Plutchik, 1962: Emotion is the felt tendency towards anything intuitively appraised as good (beneficial) or away from anything intuitively appraised as bad (harmful). This attraction or aversion is accompanied by a pattern of physiological change, organized towards approach or withdrawal. The pattern differs for different emotions.

Nico Frijda, 1986: Emotions are tendencies to establish, maintain, or disrupt a relationship with the environment… Emotion might be defined as action readiness change in response to emergencies or interruptions…

J. Campos, D.L. Mumme, R. Kermoian, and R.G. Campos, 1994: Emotions are processes that establish, maintain, change, or terminate the relationship between the person and the environment on matters of significance to a person

Leda Cosmides and John Tooby, 2000: An emotion is a superordinate program whose function is to direct the activities and interactions of the subprograms governing perception; attention; interfaces; learning; memory; goal choice; motivational priorities; and physiological reactions, etc.

[xii] While the design literature is not specific on its use of emotion terminology there is a reason to assume implicit attention to positive-negative typology.

[xiii] Emotion typologies vary even within those who make a distinction between positive and negative similar to Fredrickson. For an elaborated review consult Plutchik, 2003

[xiv] The internationally respected architect, Sven Hesselgren coined the term 'emotional loading' to characterize an element of architectural design inherent in any interior or exterior environment. (In Mahnke, 1996, p.47)

[xv] See for example the work of Hupka et al., 1997 and Terwogt & Hoeksma, 1999

[xvi] In the early days of the personal computer, all the display screens were black and white (…packaged in a gray plastic box – author's addition). When color screens were first introduced, I did not understand their popularity. In those days, color was primarily used either to highlight text or to add superfluous screen decoration. From a cognitive point of view, color added no value that could not be provided with the appropriate use of shading. But despite the fact that the interface community could find no scientific benefit, businesses insisted on buying color monitors. Obviously, color was fulfilling some need, but one we could not measure. In order to understand this phenomenon, I borrowed a color display to use with my computer. After the allocated time, I was convinced that my assessment had been correct -- color added no discernible value for everyday work. However, I refused to give up the color display. Although my reasoning told me that color was unimportant, my emotional reaction told me otherwise (Norman, 2002)

[xvii] Avery office products: Add some colour to your working life. June 25, 2004. PR Newswire Europe Limited

[xviii] This finding was first contradicted by Stone who found just the opposite! (2001) and later further refined the research (Stone, 2003) and found that when performing a simple task performance appeared to deteriorate over time in the blue rather than red environment. Alternatively, working on a complex task performance appeared to deteriorate over time when working in a red rather than a blue environment. The researcher concludes that blue is a calming color and red an energizing one, that interact with other factors (such as task complexity) to affect performance (as an overall measurement of mood, motivation and task performance)

[xix] Having said that we need to acknowledge that Stone (2001) found no effect of color in environment on motivation contrary to the work of Plack and Shick (1974) who suggested to use red and yellow in environment to motivate students.

[xx] http://www.fbe.hku.hk/include/individual.doc.asp?DocID=645

[xxi] http://www.bloomberg.com

[xxii] http://about.bloomberg.com/about/index.html

[xxiii] http://64.26.27.40/interactive/mcd2004summaryannualreport/md/page_001.php

[xxiv] While this party line is continuously advocated by the company in its publications and management communication, employees' experience not always coincide as we learned in interviews. This data was not included here as it falls outside of the scope of this research.

[xxv] http://newshub.nus.edu.sg/ke/0106/articles/bloomberg.htm: "Mr Ching Hon Siong, Client Relationship Manager of Bloomberg LP (Singapore)… shares the tale of Bloomberg's US$10 million failure, sunk into a staff reporter's ill-researched idea of a personal finance information service in US newspapers. It turned out to have zilch demand. Despite the costly mistake, the reporter remains a Bloomberg staff today"