

# Strangers in the office: workplace design for uncertainty

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## Introduction: The inevitability of uncertainty

“Uncertainty is the very condition to impel man to unfold his powers...Only if he recognizes the human situation, the dichotomies inherent in his existence and his capacity to unfold his powers, will he be able to succeed in his task: to be himself and for himself and to achieve happiness by the full realization of those faculties which are peculiarly his – of reason, love, and productive work.”

*Erich Fromm, 1947. An Inquiry into the Psychology of Ethics.*

The future is uncertain; were it not, the human species would differ fundamentally from that which exists. Human behaviour shapes and is shaped by uncertainty; by possibility and probability, hope, fear, trial-and-error, and by experiment and experience, amongst other things. We may choose to act on the basis of a planned outcome, only to encounter an unexpected one, in consequence amending our plans for future action.

This paper proposes that contemporary workplace design is often ill-equipped to accommodate uncertainty, representing reductionist and utilitarian concepts of what constitutes “work,” and what workers can and should do.

The design of office accommodation for people in many institutions—even those that claim to embrace the principle of human-centredness that is central to ergonomics—is predominantly task-oriented and rooted in accommodating the needs of the present. In such institutions, the person is both defined and constrained by what they are employed to do, rather than by who they are. There is little regard for an employee’s potential for doing something different, something better, or something as yet unknown.

This is no mere “touchy-feely” statement: the creative, innovative and productive potential of people in such environments remains largely untapped and unknown, which represents a potentially costly waste of the human resource. In contrast, freed from the constraints of utilitarianism, people are inclined to express their potential for working in a more co-operative manner with more fluid social engagement, resulting in greater problem solving, encouragement, teaching, learning, ingenuity, and innovation. These benefits are more or less absent from the utilitarian workplace.

This “fully expressed” worker is a stranger in the utilitarian workplace, because he or she can find no expression of self within it. Within this context, the worker is valued only for that which is deemed necessary to accomplish the task at hand. Their potential is prescribed by the allocation of function, division of labour, job title, organisational structure, content of training, and so on. In this type of workplace, a worker presented with an opportunity to assist beyond the remit of his or her job description may not do so, verbally rationalising “it is not my job.” This missed opportunity may be said to arise because the roles, responsibilities, and rewards within the organisational structure are rigidly defined.

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## **Introduction: The inevitability of uncertainty (cont'd)**

The rigidly utilitarian workplace is a product of the desire of its owners to control and direct human activity to achieve a predefined goal. This is essentially a command-and-control work system, in which uncertainty is a form of future threat to be negated by the application of tighter controls, more rigorous planning, micro-management, and by increasing centralisation of decision-making and power. It will be argued below that such an approach is inefficient and unrewarding, both for the employee and for the employer.

## **Work and uncertainty**

Productive work is both a source and product of human activity. Because of this, work is itself inherently uncertain. This is not a phenomenon of the current age: the hunter-gatherer engaged in work that was no less capricious than that of an investment banker, farmer, industrial labourer, accountant, or software designer.

Productive work is highly complex. It is the product of many dynamic factors, intrinsic and extrinsic, including:

- the knowledge, skills, aptitudes, capacities, and attitudes of the worker,
- macro and micro economics,
- prevailing social structures,
- individual, group, organizational, cultural and societal norms and expectations, and
- the availability of tools (technologies) used to perform it.

The dynamic complexity of work-shaping factors resists attempts to impose order on work. The more work becomes rationalised, routinised, and centrally controlled, the more it becomes machine-centred, and the less it becomes human-centred. The less work becomes human-centred, the more it becomes predictable—which intuitively feels desirable by those who own or manage an organisation. Predictability comes at a price however, which is resistance to innovation and the stifling of creativity. An organization which fails to innovate may struggle to compete or survive within a dynamic technical and economic society.

Jalonen (2012) lists eight uncertainty factors that influence innovation: “technological uncertainty, market uncertainty, regulatory/institutional uncertainty, social/political uncertainty, acceptance/legitimacy uncertainty, managerial uncertainty, timing uncertainty, and consequence uncertainty” (Jalonen, 2012).

Uncertainty about technological development can have a major impact on workplace design perspectives. Rapid technological advances force those who manage the organisational infrastructure to embrace, defer, or reject emerging communication systems and conventions. Rejection or deferment of emerging technology is reflected in conservative approaches to workplace design that emphasise “standardisation” and stasis, rather than “flexibility” and change.

## **Rules and procedures**

The organisation that reflects a command-and-control model inevitably creates a machine-like, dehumanised work environment, in which fixed rules and procedures are paramount. Within such organisations, the presence of rules may indicate that workers—in spite of careful recruitment screening—are inherently mistrusted, (and perhaps even suspected of harbouring an inclination for behaving irresponsibly or disloyally). This is the case regardless of their (probably unknown) character, aptitudes, intellect, aspirations, motivations, or potential for advancing the organisation’s goals. In effect, workers are treated like children in spite of being paid adult incomes.

A dictatorial approach may build resentment amongst workers. In contrast, workers involved in procedural decisions enjoy a sense of ownership and are most likely to exhibit a desire to ‘create’ and improve procedures—to the benefit of all. This “spirit of engagement” is undermined if it is not shared at senior level and demonstrated by all.

## **Rules and procedures (cont'd)**

It is arguable that some rules are necessary—those relating to safety, security, confidentiality, and so on. Yet even this is not necessarily true. A person whose personal well-being is attuned to that of their employer will not be inclined to engage in behaviour that causes harm to the employer. Equally, no-one who wishes to cause harm to their employer will be deterred by rules prohibiting such harm. By designing work that embraces and respects the motivations of both organisation and employee, behaviour will tend to be self-regulating, because there will be no contradiction between the actions one wants to perform and the actions one is encouraged to perform.

Procedures are ordered step-by-step ways of performing a particular task. The command-and-control organisation will tend to establish procedures hierarchically from the top down, and the process of establishing a procedure may be opaque to those who must follow it. The further procedural decision-making is from the tasks it governs (and the further the architects of the procedure are from those who carry it out), the greater the chance that it will fail to reflect the ways in which task incumbents would naturally choose to perform those tasks, and how—given the chance—they would write the procedures.

Procedures can be necessary, but they should never be immutable. Where a procedure conflicts with the preferred behaviour of the person, it is natural that they will question the need for, and design of, the procedure—this is an area for fruitful engagement. By rigidly enforcing a standard procedure even when it is considered an irritation or impediment to the person performing the task, no innovation will occur, and opportunities for increased efficiency missed. It is only in the open questioning of “how things are done today” that “new ways of doing things tomorrow” will emerge.

## **Technology adoption in the command-and-control organisation**

In command-and-control organisations, new technology is not selected on the basis of usability so much as utility. It is applied from the top down, often controlled by specialists in information technology, as with all decisions affecting “work systems.” This represents a substantive division of labour fundamentally akin to that of the industrial revolution and the automation of industrial, office, educational and scientific institutions.

The pattern of management in such organisations is “the few control the many,” and communications management specialists may limit or suppress innovation and the adoption of emerging technologies. The goals of this traditional form of organisation are reliability, forward planning, and the provision of contingencies to deal with the “unexpected,” which is likely to be viewed with apprehension.

These organisations will miss the opportunity to create dynamic, stimulating, technology-embracing workplaces. This impairs their ability to recruit the most profitable workers—those whose natural inclination is to harness emerging technologies to maximise not only their productivity but also the intrinsic reward that is derived from creativity and success.

## **Technology adoption in the innovative organisation**

In an organisation that encourages innovation, people will be encouraged to adopt mutually supportive roles which allow them to employ their social skills flexibly to meet the needs of the situation. This includes allowing employees who have rapidly acquired skills in emergent technologies to pass this expertise on to colleagues on an ad hoc or more formal basis. This form of cross-fertilisation would have the dual benefit not only of engaging those with interest in such technology to contribute to the development of the business, but also for the business itself to leverage those skills for potential commercial gain.

Training is undertaken freely and voluntarily and need not be driven by processes, but by a desire to enhance the work experience at the same time as bringing personal satisfaction to a higher level. New technology is adopted on the basis that it enhances human performance and communication. Communications management ceases to be a system that dictates which technologies are adopted, instead providing “support” or “facilitating” the corporate integration of the technology.

## Management structure and innovation

In the innovative organisation, management becomes a task that is shared at every level, which in effect makes the organisational structure horizontal, although an inverted pyramid shape may also be the case, with the majority of people being supported by a smaller number of effective enablers.

The financial reward structure need not be horizontal, however, nor even tied to a job title; in profit-led organisations, profit-sharing may be used as a financial incentive, particularly rewarding innovation which results in increased profitability and higher incomes for all.

By no means are all employees motivated or satisfied only by financial incentives, however, and the importance of recognition by peers, and a sense of personal achievement should not be overlooked as sources of gratification. "Job crafting" (Tims & Bakker, 2010) is also a potential major source of engagement for workers. Job crafting is "the process employees use to increase job satisfaction, engagement, resilience, and thriving at work. Happy employees have the autonomy to customize their jobs by changing tasks and interactions with others in order to maximize their strengths and passions" (Davis-Laack, 2013).

Affording workers greater control over their day to day work does not infer an organisational free-for-all; there is still a need for institutional strategy, for capital management, and for return on investment. There is still a place for shareholders and for the market, although advantage might be gained particularly if members of the workforce are also shareholders.

Equally, there will be those workers who favour a relatively stable, unchanging workplace. The truly flexible workplace does not enforce universal change, it facilitates it for those who desire it.

The traits sought in those called "managers" may reflect the organisational paradigm—a utilitarian, command-and-control system may value (select/promote) personal qualities such as charisma, company-orientedness, self-ambition, leadership, and so on. The innovative/creative organisation may prefer problem-solving, service-mindedness, human-centredness and selflessness. The dichotomy is that between "master and servant." Of course, even "masters" may possess "servant" skills and inclinations, but may feel obliged to subjugate them when managing within a command-and-control setting. Servant skills are more likely to be liberating and enabling for those engaged in moving an organisation forward. Successful service is measured by the degree of engagement of those served, and the demonstrable elimination of barriers to individual and collective success.

## Design implications

The innovative workplace will be designed with several things in mind: It will maximise the humanness of the space, which will be person-centred not process-centred; it will not be tied to current technologies or ways of working; it will enhance creativity; it will reflect a dynamic organisational structure that is graphically represented as either horizontal or an inverted pyramid.

In terms of the provision of suitable accommodation, this will be achieved by creating a space that satisfies the physical, psychological, and social needs of each person who uses that space.

## **Design implications (cont'd)**

Physically, the space must be configurable to ensure physiological well-being. To do this, the dimensions of the space and the equipment it contains should aim to accommodate the corresponding physical parameters of the entire intended user population.

Furniture must be “intelligent,” adapting to the task and to the user, even if neither can be precisely known. Thus, seating should be comfortable for each user throughout a wide variety of activity-related postures. This will entail careful attention both to anthropometry and to usability. The ability of a seated person to make a chair fit them optimally is a function of the seating designer’s understanding of human variability. In the current era, for example, task seating often needs to accommodate obese and/or ageing workers, without compromising the comfort of smaller, lighter, or younger users. For fixed height seating, such as sofas or armchairs, loose cushions might be needed to modify the design to fit different users.

For task chairs, adjustability normally comes as standard; yet not all chairs are equally adjustable. The more a task chair can be varied in its critical dimensions of seat height, seat depth, seat angle, backrest height, backrest angle, and armrest height, width, and depth, the greater the percentage of people it will be able to accommodate. “One size fits all,” though not yet achieved by any manufacturer of task seating, represents the utopian ideal. That said, some seating designs are much closer than others to the goal.

Seating should be task-flexible, reducing the likelihood of redundancy when purchasing workplace furniture. A chair that works whether dining, socialising, relaxing, meeting, operating a communications device, or other workplace activities, will have the greatest agility, and be the design most suited to an uncertain future. This goal may seem unattainable in the context of a conventional work setting, but with diverse technologies enabling tasks to be performed away from a desk, the need for a traditional desk-based ‘task’ chair may cease before very long.

“Space-modifying equipment” may be used to increase the closeness of fit of the workplace to the physical dimensions and physiological needs of the person using it. Adjustable footrests, leg supports, document supports, task lamps, and personal acoustic and thermal environment modifiers might be used to allow people to create spaces that work best for them. Such equipment will justify a simpler, yet still highly flexible approach to “workstation” design. Square and rectangular work tables on retractable wheels may be used in personal or group settings for eating, meeting, socialising, or other task-specific purposes. “Desks” will no longer be a useful concept, and clusters or rows of workstations linked together for cabling or to share supporting structures, requiring specialist assembly or reconfiguration, are unlikely to be ideal. Such desk systems are further evidence of a decision process defined by Industrial-revolution style utilitarianism.

Instead, work surfaces will better reflect an increasingly wireless world, and will give the workforce maximum control over the ongoing, dynamic design of their work place. These work surfaces could take the form of a dining table, coffee bar, mobile table, or kitchen worktop.

Individual users and work groups must be able to humanise the chosen work area as necessary, managing paper, filing, documents, telephones, personal equipment, connectivity, power supply, and so on, as effortlessly as possible.

Visually, the workplace will also need to suit the needs of people engaged in a variety of tasks. The partition screen has been a feature of office design in the latter half of the 20th century and the early years of the 21st century. It has a part to play in the future workplace, but not in the ways it has been used hitherto.

Mobility will be important, so that visually private spaces can be created according to the geographical preferences of users. Screens should be configurable with minimal or zero specialist assistance. Screens may be used, as now, to create functional zones, such as private, group, meeting, dining areas, and so on, but should be readily configurable by users to increase or reduce the functional space. This flexibility would go some way to changing the traditional perception of the desk as a “personal” possession with the partition acting as an archetypal “white picket fence,” instead encouraging the perception of the table and the screen as merely two components of an endlessly reconfigurable workplace.

## The acoustic environment

Partitions have also been part of the acoustic environment, in particular creating areas of speech privacy for meetings, or to reduce intrusive noise where it might be a source of distraction. They might still serve these functions in the future workplace, but auditory privacy need not rely solely on physical partitioning.

Sound can have positive or negative effects on human performance. Excessive noise or particular kinds of unwanted sound (such as background conversations, alarms, ringing unanswered telephones, and so on) can be detrimental to individual performance. The nature of the task in which people are engaged will be a factor generally in terms of preferred sound levels, but in spite of statistically predictable decrements in task performance with certain types and levels of noise, the variability between people in their affective response to noise should not be underestimated.

Put simply, some people will be more adversely affected than others by noise. This suggests that the ideal working environment will allow people either to control the acoustic environment locally--perhaps using mobile screens, noise-cancelling headsets, or sound-masking technology—or to move their activity to acoustically pre-configured zones. The acoustic profiles of these work zones may be created by the judicious use of acoustic ceiling tiles, ceiling islands, wall cladding systems, screens, cupboards, floor coverings and soft fabrics.

What is “noise” to one person may be “task” to another. Work conversations, whether face to face or via a telephone, are tasks that often give rise to noise complaints by those who overhear them. Tacit or explicit agreements between users of a space will allow auditory rules to be established and amended in line with emerging technologies. For example, telephone conferencing systems can generate sound levels of up to 90dB(A), which may be intrusive to people working nearby—if such high sound levels are unnecessary, users simply need to reduce the volume of the unit.

Privacy technologies such as passive sound-attenuating screens, booths, pods, or active sound masking systems might be used to limit the transmission of speech beyond the space of the people speaking. Ideally, these technologies will enable the expansion or contraction of the privacy boundary to meet the needs of single (e.g. telephone) or group (e.g. meeting) conversations.

Electronic sound masking (also known as sound conditioning) is a means of providing confidentiality within work areas by raising the “noise floor.” Sound masking systems are widely installed in offices in the USA. Unlike constant frequency “pink noise” and “white noise” generators, both of which may be readily negated by the brain’s auditory filter, sound masking systems deploy random sound that is restricted to the human auditory frequency range. To people beyond the immediate conversation zone, speech within that zone is rendered inaudible or unintelligible.

In social settings, or where collaborative discussions (e.g., brain-storming) are taking place, sound levels may be obtrusive to people working nearby. The provision of reconfigurable meeting and socialising spaces will be helpful. This might include the capability of screening off the meeting or socialising areas, and by making use of localised sound-masking technologies. The choice of furnishings, fabrics and finishes should take the dynamic acoustic environment into account when designing the workplace. This approach builds on the principle of task-related work settings, acknowledging that only a percentage of ‘work’ task during the day necessitate a formal desk. Rather than adding ever-more acoustic solutions in and around the desk, to enable the desk to be increasingly functional, the alternative concept of a menu of work-settings which would be tailored to the needs of concentrative, collaborate and group working would be a better fit for the innovative organisation.

## **Colour and lighting.**

Colour has been widely studied in regard to influencing human performance. For example, one study involving 600 people found that a predominantly red environment enhanced performance on a detail-oriented task, whereas a blue environment enhanced creative task performance (Mehta & Zhu, 2009). Another study indicated that “blue (*relative to green*) light increased responses to emotional stimuli in the voice area of the temporal cortex and in the hippocampus” parts of the brain (Vandewalle, et al., 2010).

In order to take advantage of the affective role of colour, the workplace designer might use coloured mobile partition screens, adjustable hue lighting, or a combination of the two. The utilitarian approach of blanket use of white or neutral wall surfaces has the benefit of creating light and bright spaces, but can also lead to a feeling of ‘dehumanised’ space and to problems such as glare. Enabling users to vary the colour of their workspaces could enhance their mood and performance. It will also be possible to use colour to define work areas optimised for particular types of activity, on the basis that individuals will then be inclined to work in those areas.

The lighting preferences of older workers and of those with visual impairments, (both of which represent an increasing proportion of the working population), can vary considerably from those of younger people with nominally ‘perfect’ (whatever that may mean), vision.

Levels of illumination should not be homogenised within a space, and individuals should be able to control the quantity and quality of illumination at their chosen workplace to the greatest possible extent. Such is the variability in individual preference that the more personalisation can be built into the design of a lighting scheme, the greater the chances of overall satisfaction from its users.

## **The thermal environment**

Within the office, frequently reported sources of dissatisfaction include excessive or insufficient temperatures and excessive air movement. Draughts from inconveniently located or directed air conditioning vents are a common problem for some people, and may be associated with increased risk for complaints of musculoskeletal discomfort. Draughts are only a major problem for the preconfigured workplace; the freedom of individual location within the new workspace should allow people to site themselves and their tasks where excessive air flow is not an issue.

Temperature within the workplace also elicits individual dissatisfaction. In preconfigured single occupancy cellular offices that provide local control over temperature, occupants may fail to make adjustments to thermostats for a variety of reasons, including poor controls in terms of user interface design (Karjalainen & Koistinen, 2007). If user-adjustable controls are to be provided in any area, these must be designed for maximum usability—which should be evaluated by non-expert user trials of the controls—and if necessary, simple “quick guidance” instructions should be positioned adjacent to thermostatic controls.

In open plan work spaces, which are those ideally suited to the flexible environment, present heating technology makes it highly unlikely that every worker’s thermal preferences can be satisfied. In this case, a simple experiment and survey will enable the employer to establish the temperature that satisfies the highest percentage of people. The availability of local cooling fans or heaters might enable more people to be optimally accommodated, albeit with increased energy costs, including the costs incurred as the main temperature control system adjusts to the altered thermal profile.

New heating and cooling technologies might be available in the future which will overcome the problem of a lack of control over the individual thermal environment, but for the time-being, there are no perfect solutions.

## Social features of the workplace

The engaging workplace is one in which the distinction between “work” and “leisure” is weak or absent. By providing and supporting opportunities for free social interaction throughout the organisation, people will be enabled to form and develop friendships and interest groups in such a way that being in the workplace is socially rewarding.

The provision of diverse relaxation areas and in-house catering are part of the answer, but it will also be necessary for those who own or direct the organisation to also accept that “work” is not defined by location in the flexible environment, and that social interaction and leisure is part of both the process and the landscape of engagement. This is feasible only if both employees and organisation are attuned to the same overall productivity aims—and if such a working culture is explicit within the organisation. That said, there are people for whom the ideal working pattern is long periods of relaxation interspersed with intense but brief periods of task-directed activity. There are others who favour a more measured, evenly divided pattern of rest and task-directed activity. Others may be wholly task-directed by preference, and may choose little social interaction, and shorter attendance in the workplace itself.

Regardless of preference, the productivity goals of the organisation will remain intact, and so long as people accept their responsibility for achieving those goals, allowing them the freedom to work and to socialise in ways that suit their personalities and preferences will result in greater satisfaction.

The design of socialising areas might include at one end of the scale large group entertainment areas, and at the other end voluntary social isolation areas, (when socialising is not the preference). This variety is key to the success of this approach, to enable users of the space to select the most relevant environment, and to feel able to interact in ways that suit their preferences. Because socialising preferences are dynamic, rather than static, the socialising facilities should be reconfigurable or multipurpose. For example, it might be possible for staff to host lifestyle or personal interest meetings and seminars, or to present movies or documentaries in conference areas. More formal areas will need to be set aside and equipped for games or sports.

## Inclusion

In physical terms, the flexible workplace is inherently more likely to be accommodating of diversity when compared with a preconfigured workplace. Disablement is a consequence in part of the inability of the built environment to accommodate the sensory, physical, or psychological diversity within the population. The greater the personal adjustability of the task, the fewer barriers will exist to prevent full engagement due to task inflexibility.

Disablement also occurs because of attitudes based on a spurious notion of “normality,” in which diversity is accepted as “normal” only up to a point; beyond this point, the person is seen as “impaired.” The “impaired” person is then seen as either in need of rehabilitation to make them fit the built environment, or in need of specialised assistive technology in order to work productively. Just as the “command-and-control” type of utilitarian organisational structure stifles innovation, so this “medical” paradigm of disability as something inherent in the “impaired worker” limits the potential for all people to be productive, satisfied, and engaged at work. In a real sense, “normal” does not exist: “There are no norms. All people are exceptions to a rule that doesn’t exist” (Fernando Pessoa, 1888-1935).

The innovative workplace in the 21st Century is inconsistent with the 18th Century paradigms of normality and disability. It is safe to assume that the bigotry against anyone who does not conform to some arbitrary standard of “normality” has cost organisations and society dearly by restricting the potential for innovation and organisational development to the favoured few who appear to meet that standard. The innovative organisation will be inherently inclusive and enabling, because it affords individual control over the use of technology, supporting the individual’s potential for development and growth.



## **The flexible accommodation of technology**

By contrast, the lumbering dinosaur of many computer networks, with single-platform software and poorly designed user interfaces, consistently prevents the modification of the interface to suit the specific needs and preferences of the end user. It must not be forgotten that software which is not usable is useless software, and is inherently wasteful of time and money. By embracing the concept that people will have different preferences in respect of information and communication within and without the organisation, organisations will have networks that are designed from the user's perspectives, not those of the network manager.

The network manager's role will become mainly focused on ensuring the smooth accommodation of diverse technologies, (including those as yet unknown which will inevitably arise), and the protection of data security.

Organisational communication systems need to be multi-nodal—including wireless, wired, cloud, etc., readily upgradeable, readily replaceable, and able to use external communications systems wherever feasible and safe.

## **Managing change**

Within the innovative organisation, roles will tend not to be rigidly defined; the "job title" is a feature of the utilitarian, command-and-control organisational model, and is associated with the centralisation of expertise and power. As has been mentioned, the shape of such organisations is pyramidal, with the apex representing the directors or owners, and the base being comprised of lower order "task incumbents."

This is the very antithesis of the innovative model, in which all workers share both the responsibility for, and authority over, achieving the goals of the organisation. By default then, the design of the engaging workplace, physically and psychologically, will encourage free interactions without status barriers, and would facilitate the behaviour patterns of the organisation.

One aspect of this will be the aim and content of staff "performance evaluations." These are typically used to determine wage increases, promotions, or areas of failure in personal development. They are nominally two-way processes, but in reality are often perceived as a management tool to control the reward of subordinate staff members. What part—if any—will performance evaluations play in the innovative workplace? These still have a useful part to play, but now as opportunities for individuals to highlight to their "support staff" (i.e., those now known as "managers" or "directors") areas where additional resources might be allocated in order to achieve organisational and personal development. They are opportunities for formal discussions about how to remove barriers to optimum performance, enabling the support staff to direct their efforts in fruitful directions.

This does not mean that there is no responsibility for individual workers to perform—just the opposite, in fact—this approach brings greater personal responsibility, because the preparedness of the organisation to eliminate performance barriers that the workers themselves have identified represents a contractual obligation both to accurately identify the barriers and to show a quantitative or qualitative benefit to the organisation once they have been eliminated. Individuals who no longer work effectively in achieving the goals of the organisation in spite of being provided the opportunity to do so should be replaced. This outcome is both fair and logical.

Changing the physical design of the workplace to accommodate uncertainty is relatively straightforward. The greatest challenge for those who would gain the performance advantage offered by uncertainty will be adjusting organisational structure and the behaviour of those who presently occupy traditional manager/subordinate positions. This will not happen without considerable planning and assistance, at least at the outset.

## Managing change (cont'd)

As an organisation adjusts to more flexible, enabling and engaging ways of communicating internally and externally, the psychological, social, organisational (hierarchical/utilitarian) and physical barriers that are a feature of the “command-and-control” design paradigm will be supplanted by a more fluid model which explores and embraces technological and social change.

The first step is to determine if the organisation will benefit from change—and if so, to assess its readiness for change. The identification and analysis of barriers to productivity can be accomplished by drawing on the expertise of specialists including ergonomists, social scientists, and management consultants.

Once a rationale for change has been identified, change must be managed. This will necessitate securing the cooperation of all stakeholders, planning and agreeing a timetable for change, and implementing it. This is a major, complex undertaking, and will necessarily involve significant collaboration between planners, designers, employers and employees.

## Measuring change

Few organisations will be prompted by altruism to shift from a constraining to a liberating design paradigm. If, as this paper claims, there are benefits to be derived from such a shift, then might these not be calculated in advance? Such calculations would necessarily be based on such abstractions as: capital investment, security, productivity, flexibility, satisfaction, engagement, innovation, and so on. In fact, the number of variables is potentially very large, since in theory any feature of work might be measured using qualitative or quantitative methods, or some combination of the two. Once variables of interest have been identified, their values might be determined at the outset, and projected at some future point in time.

It must not be forgotten that a primary claim of the innovative workplace is its ability to cope with *uncertainty*. Ultimately, “what if?” scenarios are probability exercises based on hypotheses limited by the imagination of those who select those scenarios. Logically then, all possible scenarios (e.g., future advances in communication and technology) cannot be known. Nevertheless, some modelling—even if it necessarily takes the form of educated guesswork—might help to clarify the potential cost-benefit of a radical shift in the work design paradigm. This modelling might draw upon economic, ergonomic, psychological and sociological data gathered and analysed as part of a feasibility study, identifying performance barriers in particular. The data would be quantified and compared with projected changes in the selected variables.

Bäenninger (2014, personal communication) concisely illustrates this approach using a spreadsheet-based “spider” graph that depicts work design variables before (now) and after (projected). Such models have merit in that they can help reveal aspects of a design proposal that would justify attention by the designer. An example of this graphical illustration may be seen in Figure 1. (next page)

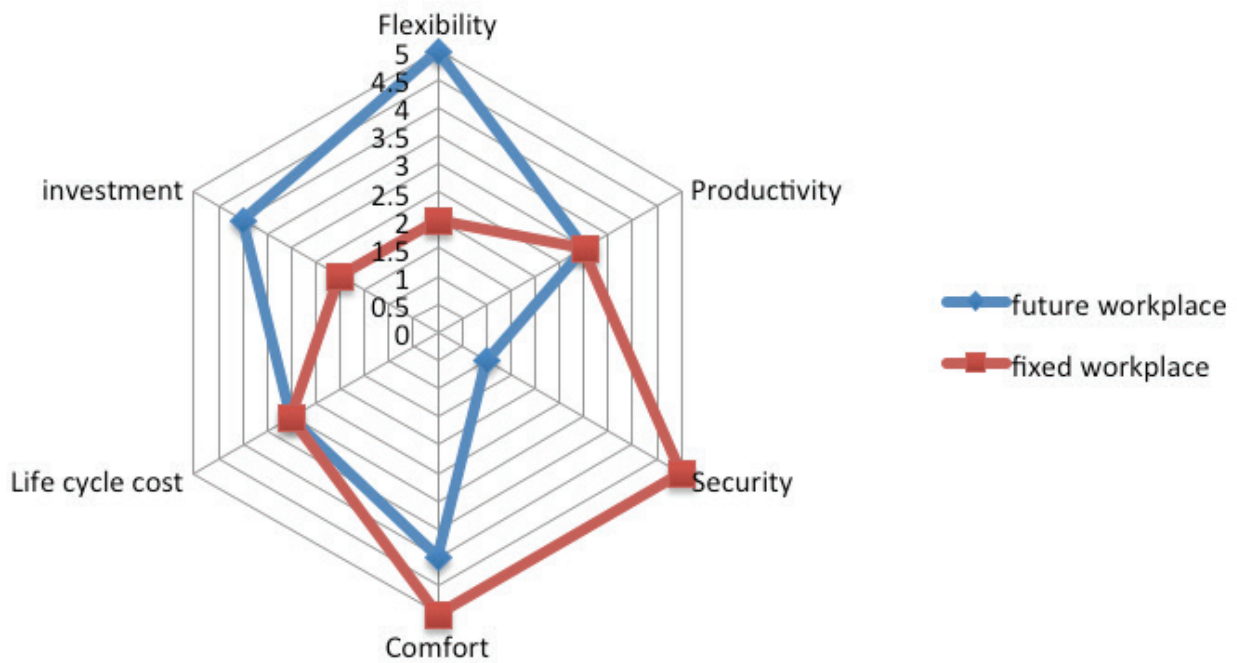


Figure 1: Theoretical comparison between future (flexible) and fixed workplaces. (Bäenninger M.W., personal communication, 01/02/2014).

Ergonomists, sociologists and psychologists can help to discover and quantify organisational barriers to optimal performance, engagement, and innovation. Barriers might be organisationally structural, which can be an unpleasant reality for management and owners of organisations.

**This may be illustrated by a real case study undertaken several years ago:**

A production director appointed a consultant to discover why long-term staff were suddenly complaining of musculoskeletal injuries and why productivity had recently fallen. The director had believed poor physical design of the production area was to blame.

The consultant’s use of a straightforward ethnographic technique revealed this not to be the case; in fact the rise in complaints and falling production resulted primarily from the workforce’s covert resentment of changes in shift patterns that the management had implemented. These changes had been effected without discussing with workers the consequences to their domestic arrangements (especially in areas such childcare and loss of “family time”).

When the true source of complaints and falling production was reported to the production director, his response was “this is not what I wanted to find!” This is an example not only of problems arising from a command-and-control approach to work design, but also of the reluctance of managers to acknowledge that they sometimes create barriers to engagement and productivity. If production staff had been engaged to find a solution in which production was not diminished, this change in work schedules could have been facilitated. This would have been the better role for the production director. The loss of production and the increased costs in terms of sickness absence and primary care (by onsite occupational health staff) were predictable and calculable.

The conscious desire to identify and eliminate barriers to worker engagement is a prime component of the innovative workplace, and must be drive the process of change irrespective of where such barriers are found. The barriers are generally discoverable, measurable and removable—given the will to do so.

## Conclusion

This paper has outlined the benefits for organisations which embrace the uncertainty-for-profit principle. These include: the capacity to take advantage of emerging technologies; to utilise new modes of interpersonal communication; to engage the workforce in accordance with the goals of the organisation; and to draw on the skills and aptitudes of a diverse population.

This will be achieved by adjusting the physical, psychological, social, and control design of the organisation. In particular, the innovative organisation will eschew a command-and-control, top-down management structure in favour of supporting the engagement, empowerment and personal development of every worker. This will be accompanied by increased decentralised control, authority, and responsibility, with “management” activities geared towards supporting excellence by eliminating identifiable barriers to personal development. The resulting performance will be measurable against the goals of the organisation, in the setting of which all employees will be cooperatively involved.

The innovative organisation will readily adapt to a marketplace that is unpredictable, using as yet unknown technologies, and harnessing its innovative assets—its people—to greatest effect. In the same marketplace, the command-and-control utilitarian organisation will be inflexible, wasteful of its resources, limited in its potential, and ultimately rejected as a source of satisfying employment.

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