

SOUND & VISION

**WHY THE DISTRACTED WORKPLACE
ISN'T JUST ABOUT NOISE**



foreword

BY MARK BARRELL, DESIGN DIRECTOR

The idea of a cocktail party might be a bit dated, but it is the perfect metaphor for describing one aspect of the most common complaints about modern office design.

An idea called the cocktail party effect has been known to neuroscientists for decades. It describes how we are able to filter out a large amount of noise and focus almost completely on just one source of sound. So, while we clutch our Manhattan, we can listen intently to just one person and ignore the babble of voices that might otherwise drown them out. We can tune in to the source we think is important and tune out everything else.

The underlying principle is that we respond not just to the amount of noise in our surroundings, but also other factors, many of them unconsciously.

Even so, if you ask most office workers what they find most irritating and unproductive about their workplace. They're most likely by some distance to suggest that it is sound. The issue has intensified over the past few years with the proliferation of mobile devices and because the amount of space allocated to each person has fallen substantially as firms adopt more space intensive and agile workplace models.

By most measures, space allocation per person has dropped dramatically in recent years. This can be problematic because it can cause us problems at a visceral level. Proxemics, is the study of personal space and its originator cultural researcher Edward T Hall claimed that people typically have up to four zones of comfort. These are dependent on the level of intimacy with the other person, and are classified as 'intimate', 'personal', 'social' and 'public'. Invade those spaces and it's trouble.

In short, we're making more noise than ever before and we're closer together while doing it. It's a perfect storm.

It's tempting to think that the core problem we must address is the amount of sound in the workplace. And there is some truth in this, of course. The most obvious idea that arises from this is that offices are too often designed for the eyes and not the ears.

When you accept this premise, the obvious solution to the problem of office noise is to try to reduce it with acoustic pods, screens, baffles and quiet rooms. These are essential elements in a modern work setting yet it is important to recognise they are part of a solution that acknowledges the complexities of the issue. The best solution is one that addresses all of the senses as well as the unconscious. We are fortunate that we know far more about these complex and inter-related factors than ever before and the designed solution to them in the workplace. This paper sets out to introduce them. I hope you enjoy it.

sound & vision

THE CORE CHALLENGE

In most office feedback surveys, the two biggest causes of dissatisfaction cited by occupants are temperature and sound – or in technical terms thermal comfort and noise. Building standards and some of the core tenets of office design and furniture specification set out some basic principles about these factors, but the issue is complicated by the fact they are also the two aspects of an office most sensitive to personal differences and the unconscious biases we all possess.

Individual preferences can be exacerbated all too quickly in those poorly designed offices in which people are too closely packed and in which they have little or no personal control. The thermostat or an open window can become flash-points just as quickly as the insensitive use of phones.

When it comes to the problem of sound and distraction, the majority of both executives and employees now report near-constant noise in their workplace and many say they lack quiet space for meetings or for individual focussed work.

The statistics are quite shocking. According to one of the latest major studies into the issue, carried out by researchers at the University of California, a typical office worker is interrupted as often as every three minutes. To make matters worse, it takes us up to 23 minutes to be able to return to the task at hand.

This is particularly a problem in an age in which the primary goal of the workplace is to encourage collaboration. Most of us do not accomplish things on our own, but rather we often rely on colleagues to contribute. According to data from workplace researchers Leesman, on average 34 percent of all people present in a workspace are interacting face-to-face at any one point in time.

Meanwhile, a study of 11,000 workers carried out by office design firm Unispace found that 60 percent of an average working day is devoted to individual task-focused work; 25 percent to collaboration, 7 percent to socialising and around the same for learning.

The research found that the issue of noise has actually become much worse over the last two years, with more workers complaining compared to the same research conducted in 2016.

Survey respondents flagged noise (15 percent) as the primary cause of inefficiency during the working week, a number that has risen by four per cent in just 12 months. Second to this was a lack of quiet areas (13 percent) and a lack of privacy (9 percent).

As far as offices are concerned, it is other people that are most likely to be the source of distractions, acoustic, visual and even olfactory.



how

PEOPLE RESPOND

A recent comprehensive study published by Oxford Economics and Plantronics confirms that the problem is becoming increasingly acute and that a large number of offices are not designed in a way that addresses the problem, meaning that people take their own steps to address the issue.

In fact, three quarters of employees say they need to take walks outside and 32 percent listen to headphones to focus and block out distraction, while employees in the noisiest office environments are more likely to say they'll actually swap their job for a working culture that offers fewer distractions.

The report also found that noise and distractions are having a negative impact on employee wellness, productivity and financial performance, with 63 percent of employees saying they lack quiet space for focused work, which has a negative effect on their productivity, satisfaction and wellbeing.

Unsurprising, pretty much all (96 percent) of executives see employee productivity as critical to their financial performance, yet just 40 percent understand the link between noise, distraction and productivity. A mere 6 percent of executives report having an office with noise mitigating features.

This is perhaps surprising given what we know about how acoustics affect performance. According to a report from the Commission for Architecture and the Built Environment (CABE – now merged with the Design Council), people enjoy a 38 per cent improvement in their ability to perform many tasks if they work in a workplace where acoustic conditions have been optimised. The same survey also reported that people perform 16 per cent better in memory tests and 40 per cent better in mental arithmetic tests, when they aren't disrupted by undue noise.

the psychology

OF DISTRACTION

This is not just a physical problem. 75 per cent of perceived noise annoyance can be attributed to personal and psychological factors according to acoustic products manufacturer Saint Gobain Ecophon.

The main distinction to draw is between sound and noise, and this has a strong subjective component. What one person might think of as racket, another person might find stimulating or enjoyable. Although this is subjective there are some rules about why we have different perceptions. These include factors such as a person's evaluation of the necessity of the noise, the meaning attached to the noise, whether it can be controlled and its context – in particular whether it is normal and expected, such as the sound of a printer or the background hum of lighting and air-conditioning.



A study published in the British Journal of Psychology has highlighted the role that 'irrelevant noise' plays not only in disrupting work, but also in increasing stress levels and decreasing job satisfaction.

In a 2010 TED talk titled "Why architects need to use their ears", acoustics expert Julian Treasure points out that "your ears are always on", compared with eyes which we can shut and thus switch off from visual stimuli.

As we mentioned in the introduction, psychologists refer to the "cocktail party effect" as the ability to differentiate important or relevant information from background noise. Paradoxically, workplace conversations in the background might not be considered noise if they contain what the listener thinks is useful information, whereas irrelevant conversation will be perceived as noise and so be annoying and distracting.



not just

ABOUT VOLUME

A 2015 meta-analysis of over a hundred research papers carried out by the environmental psychologist Dr Nigel Oseland found that just 25 percent of the effect of noise in the office could be attributed to its volume.

More than half of the effect is due to psychological factors such as context and attitude, perceived control and predictability and personality type. "Noise is a psychophysical phenomenon", he wrote, "and as long as we continue to focus on physical metrics and disregard the psychological component, we will never resolve the biggest and often ignored problem of noise in the workplace."

Writing in 2014, Professor Dylan Jones of the University of Cardiff sums up the problem: "Distraction is the price we pay for being able to focus on an event of interest while also gleaning some information from other sources of information. This arrangement has the undoubted advantage of allowing flexibility and adaptability – we can quickly move to new or potentially significant events – but it does mean that extraneous events of no significance can 'capture' attention. Distraction from sound is particularly pervasive because we are obliged to process sound – whether we want to or not. Very low levels of sound can be quite damaging to cognitive performance, deficits of 20–30% being commonly found in the laboratory."

Recent research has shifted attention away from the problem of volume and onto how even quiet sounds can be distracting. This is because we are obliged to process noise, as Julian Treasure also points out. This means the problem has a physical and psychological dimension and suggests its solutions will exhibit the same characteristics. It's not just about volume.

personality

IS IMPORTANT

Susan Cain is the author of *Quiet: The Power of Introverts in a World That Can't Stop Talking* and has talked widely about the focus on extroverts in business and by extension workplace design.

This is perhaps inevitable as they're the ones demanding most attention, as Cain points. But in an office design context, 'buzzy' environments and the push for stimulation and proximity can be overwhelming for introverts.

Paradoxically, Nigel Oseland has also suggested that "extroverts spend less time in the office, and when in the office they are away from their desk in meetings – so we appear to design our workplaces for the people who are not actually present."

Psychological research into the distinctions between introverts and extroverts suggests that everybody is striving for an optimal level of stimulation to be at their happiest and most productive, but that this optimal level varies widely. The result is that, while over- and under-stimulation both lead to a fall in productivity and wellbeing, those mean different things to different people.

It is also important to note that the trait of extroversion-introversion does not suggest that people fall into two distinct camps or that people have the same needs and preferences all of the time. We're more complex than that and this means that the office should be too.

This has profound implications for both workplace design and work culture. Most importantly, it suggests that a homogenous office – either an entirely cellular or open plan space – will have an inconsistent effect on the people who work in it. So, the challenge is how to create workplaces that can accommodate a range of personality types conducting different tasks.

source

IS KEY

One other aspect of the way we respond to noise and sound is who is making it and its context. The Scandinavian researchers Anders Kjellberg and Bertil Nordstrom found in one of their studies that sudden noise was far more distracting than constant background noise.

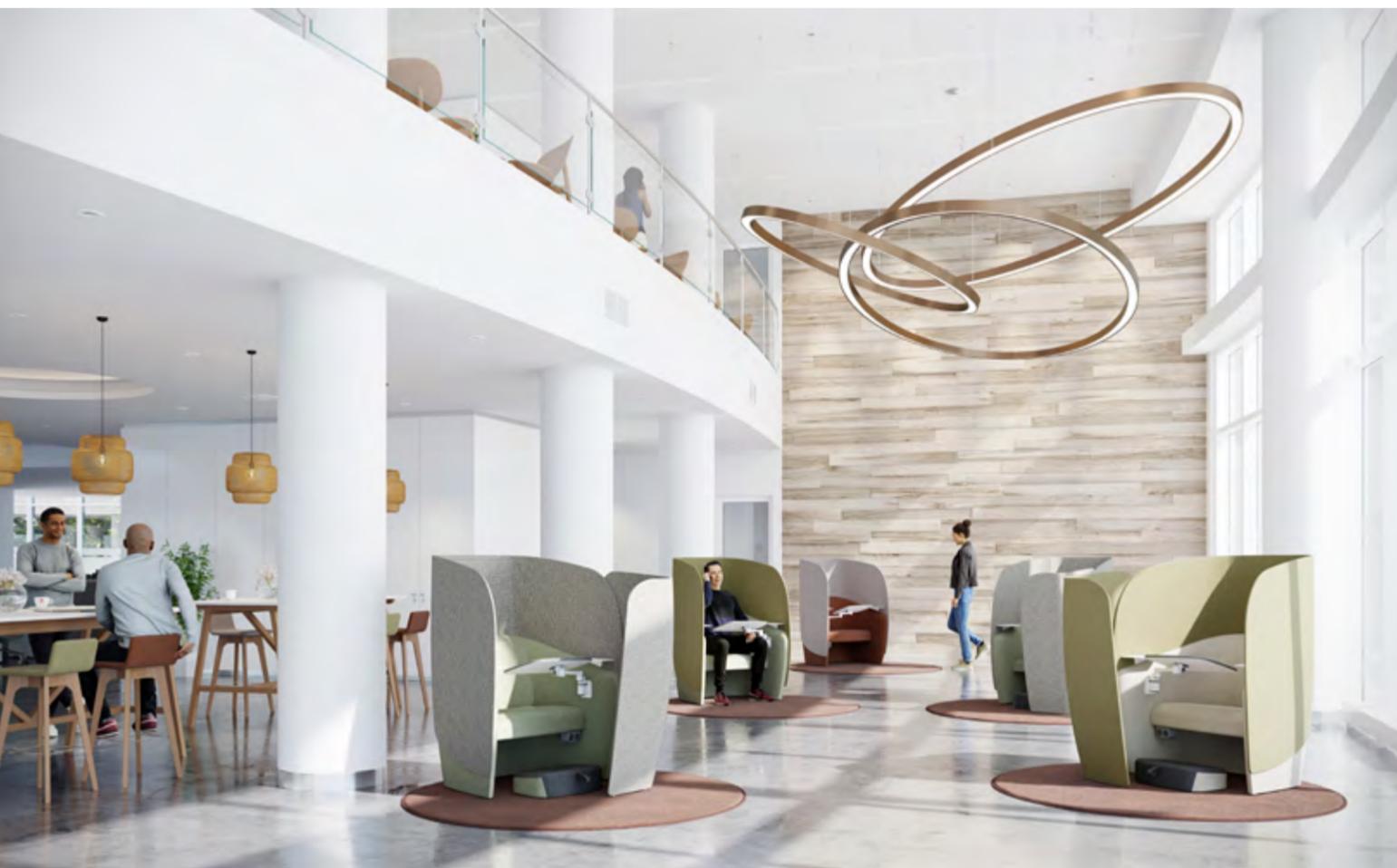
They also found that the noise of printers and shredders is only really annoying for the people not using the equipment. The same researchers also recount research that shows that colleagues' speech is more of a problem when it is unintelligible or irrelevant. There is a growing body of research which suggests that a level of ambient noise might be beneficial for creative work.

One study, published in the *Journal of Consumer Research*, found that the right level of ambient noise triggers our minds to think more creatively. The researchers, led by Ravi Mehta of the University of Illinois Urbana-Champaign, examined various levels of noise on participants as they completed tests of creative thinking.

Participants were exposed to various noise levels in the background, from total silence to 50 decibels, 70 decibels, and 85 decibels.

The participants in the 70 decibels group, a similar level of ambient noise to a coffee shop significantly outperformed the other groups, who were working in conditions akin to a library and next to a food blender respectively.

The conclusion for office designers is that an optimal acoustic environment is one that doesn't deaden sound, but instead creates a space that allows for both distraction and focus.



activity BASED WORKING

According to a survey of 90,000 people by architects Gensler, 'the most significant factor in workplace effectiveness is not collaboration, it's individual focus work.' Conversely, the report also concludes that 'focus is also the workplace environment's least effectively supported activity.'

The results echo earlier research. A study of 13,000 employees carried out in the US by BOSTI Associates in 2001 found that the single most important factor in determining productivity was 'the ability to do distraction-free solo work'.

The conclusion of both studies is clear and fits with all the knowledge we have on acoustics and human behaviour. We need to create environments with a range of settings that allow people to find the right space in which to work, whatever their psychological, physical or practical needs.

Provide employees with areas where they can focus, concentrate and gain some headspace and you will reap the rewards in terms of a more productive and engaged workforce.

This model of the workplace based on task-oriented zones, now routinely described as activity based or agile working, is not new and dates back at least to the time of the combi-office, a mixture of cellular and open plan, that was a common feature of European offices long before we even knew what a laptop was.

The key difference nowadays is that while the combi-office was frequently specified as part of a hierarchical vision of work, with cellular offices going with status as part of a relatively rigid layout, modern organisations prefer to focus on the democratic benefits of agile working.

focussing

ON FUNCTIONALITY

So the provision of zones for private and interactive work nowadays will typically be far more dependent on function and need than on status. Because of this close link with functionality, this sophisticated model of the workplace is invariably reliant on a thorough understanding of the organisation's needs as well as those of the people who work for it.

It is also likely to be a better solution than a traditional open plan space in creating a collaborative working environment that meets the needs of a wide range of people.

The results of a survey of nearly 43,000 US office workers in a recent issue of the Journal of Environmental Psychology makes the point clearly. The researchers Jungsoo Kim and Richard de Dear in the Faculty of Architecture at the University of Sydney applied their research to assess some of the most commonly held beliefs about open plan offices, especially the assumption that they 'facilitate communication and interaction between co-workers, promoting workplace satisfaction and team-work effectiveness'.

What the research shows is that the thing that bothers people most is not noise level per se but rather their lack of privacy, both in terms of hearing what other people are saying and having their own conversations overheard.

While a quarter of the survey's subjects said they were dissatisfied with the level of noise at work, over half of the huge sample of workers in open plan offices cited their lack of acoustic privacy as a major frustration at work. This made it easily the most important issue facing workers according in the survey.

In the context of the research, this goes against one of the arguments most commonly made in favour of open plan offices, namely that by opening up the workplace people are free to exchange information and ideas. What happens in practice according to the researchers is that it is those workers with a higher degree of privacy who feel most likely to share with colleagues, safe in the knowledge that information is only going to those intended.

They conclude: "Our results categorically contradict the industry-accepted wisdom that open-plan layout enhances communication between colleagues and improves occupants' overall work environmental satisfaction".

This makes the point loudly and clearly that when it comes to making people more productive and happy at work, the most important thing you can offer them is the right level of acoustic and visual privacy. They need to work with their colleagues and enjoy the benefits of interacting with other human beings but there is a better balance to be struck than the one many have right now.



solutions

SOUND & VISION

Sound is prone to bounce off ceilings and follow sight lines so the way a building is designed can have a significant impact on noise levels in its interior. The type and shape of a building is often beyond the control of the organisations that inhabit them so, regardless of its architecture, there are several basic elements to address to deal with problems of noise in a building, including ceiling systems, sound masking systems, furniture, flooring and interior design.

Whatever the culture and physical environment there are solutions available for those who design and manage workplaces, including:

Furniture and partitions

All furniture will absorb some level of sound, but upholstered screens and partitioning are by definition particularly effective. Properly specified, such 'interior architecture' may absorb around 85 per cent of ambient, intrusive sound, which is particularly important where teams who may need to communicate on an ad hoc continuous basis are situated near to people from other disciplines or who need to work quietly.

Recent research and development have also introduced the world to a new generation of products aimed at helping people to create acoustically well-balanced workplaces. These include products specifically designed to create a balanced working environment, even in an open space to meet the needs of a wide range of people and tasks..

A new generation of products

In fact there is a whole generation of new products that have been developed in response to the growing demand for privacy and quiet.

These include freestanding pods which create spaces for individual private work as well as enclosed meeting spaces in larger configurations. Similarly, high backed seating addresses the need for individual space as well as meeting and breakout spaces. These can be used in collaborative configurations to provide zones with a high degree of visual and acoustic privacy in even the most busy office. Screens have long been used to break up space and reduce noise, but the latest generation of screens applies our growing knowledge of how people react to sound to create flexible solutions that can be adapted over time in response to changing needs.

Interior design

It's not just about products. The average workstation footprint has shrunk by over 25 per cent in the last few years, saving space and money, but with the potential for counter-productive cramming. A well-designed layout will minimise sight lines and also group people sensibly. It will take account of trends such as higher occupation densities and accommodate for them. Specifying quiet work rooms and break out spaces can be essential (if properly monitored and managed) so that people can work in the right environment for the job in hand. The intelligent use of screens and partitions helps to provide the right balance of privacy and interaction.

Culture

Certain organisations, like certain people, are inherently louder than others. In many cases, noise is important for creating a buzz and turning the workplace into a soundless crypt with people working in bubbles will be counterproductive. So, it's important that the physical environment you create is a true reflection of your culture and that your goal should always be to get rid of irrelevant noise. Once again interior design can play an important role in signifying the culture to people. Products and layouts can indicate to people which areas are suitable for quiet and focussed work and also which are more collaborative and communicative. This encourages them to make different choices about their behaviour so everybody benefits.



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