

The ties that bind? Exploring the impact of a playful technology
installation on weak ties at work

ABSTRACT

In this paper, we explore the ability of a cheap, playful installation to foster greater interaction between co-workers and a sense of fun in a poorly designed public sector workplace that has long-standing issues of lack of community, cultural integration, and siloed work practices. We find that there are a number of organizational, social, economic, and cultural constraints that shape the possible intervention. These are context and institution specific, and should inform any potential technological intervention. The study demonstrates that a sensitive and creative design can provide a number of positive outcomes for workers and the organization. It can foster new introductions, sustain conversations, act as a social lubricant, provide stress relief, stimulate interest in the workplace and generate creative attitudes to chronic organizational issues, promote a sense of democracy, worker autonomy, and trust.

Keywords:

Interactive technology; Community; Weak ties; Play

The ties that bind? Exploring the impact of a playful technology installation on weak ties in the workplace

INTRODUCTION

Community, Knowledge-sharing and Weak Ties

Workforce collaboration improves organizational performance (Campion, Medsker & Higgs, 1993; Haas & Hansen, 2005); determining how this can be achieved and promoted is a rich field of enquiry in organizational research. Knowledge-sharing clearly has a strong interpersonal component and is driven by interaction between members of the workforce (Simon, 1991; Kang, Morris, & Snell, 2007). Weak interunit ties help project teams search for useful knowledge in other subunits (Hansen, 1998; Gabbay & Zuckerman, 1998; Tsai & Ghoshal, 1998), and research suggests that much learning occurs through heterogeneity in personal outlooks and worldviews (Brown and Duguid, 1991). Hence organizations that seek to drive change, renewal and innovation should actively promote interaction and cross-pollination between actors with diverse skillsets, professional experience, and knowledge competencies (Easterby-Smith, Crossan, & Nicolini, 2000; Edmondson, Bohmer, & Pisano, 2001).

There has long been a recognition of the importance of social capital to sustaining a powerful, dynamic and committed workforce (Nahapiet and Ghoshal, 1998; Adler &

Kwon, 2002), and employees “exhibit a clear preference for viewing the employment relationship as a social as well as an economic exchange” (Rousseau and Parks 1993, p34). Increasingly, workers identify with the importance of creating new contacts and networks, as social capital is widely recognised as being crucial for career success (Burt, 1992; Gabbay & Zuckerman, 1998; Adler & Kwon, 2002). The ubiquity of dedicated networking events and opportunities at conferences and meetings is testament to the desirability of generating new interactions and relationships, however despite the best intentions, a high degree of inertia and reluctance is often evident when individuals are confronted with the reality of interacting with strangers (Ingram & Morris, 2007). Although, professionals are increasingly being driven to share knowledge across the organization (Adler, Kwon & Heckscher, 2008), highly-skilled autonomous knowledge workers – who are socialized, trained, and rewarded based on individual achievements – may see little personal reward in collaborating with others (Gardner & Valentine, 2014). Research has also shown that professionals are exercising increasing agency over with whom or when they wish to collaborate (Hackmann, 2002; Blumer, Green, Murphy & Palmanteer, 2007); the interests of these voluntary, self-directing collaborators may not necessarily align with those of the organization (Adler et al., 2008).

In spite the widely acknowledged importance of sustaining connectedness in the workplace, social capital is often challenged by macro-level changes in work practices. In response to an increasingly competitive and globalised marketplace, managers have sought to develop strategically flexible organizations using tools and practices such as job-sharing, teleworking, contracting, and virtual teams (Townsend, DeMarie & Hendrickson, 1998), and while novel information and communication

technologies (ICTs) have greatly facilitated the rise of such lean organizations, the depersonalising effects of ICTs can challenge the weak ties ('bridging bonds') that sustain community (Putnam, 2000).

Interaction through Technology

Technology clearly plays an enormous role in connecting people in the workplace, however it can also undermine or obviate some of the most important advantages of physical co-presence. The ubiquity and ease of use of tools such as email often act as a disincentive for colleagues to seek one another out, and there is a growing body of literature that discusses the negative effect of the ex post facto documenting of interactions and decisions through follow-up emails. Such practices can have inhibit interpersonal trust between colleagues, and counteract the fostering of the weak ties that promote knowledge sharing and organizational learning (Levin & Cross, 2004).

However, in recent years there is a growing interest in technological interventions that facilitate interactions between workers, with particular focus on improving the shared social experience (Dodgson, Gann, & Salter, 2005). Digital technologies can promote easy, rapid, cost-effective experimentation within the workplace, and encourage workers to share, play with, and exchange complex ideas. To greater or lesser degrees, many digital technologies can foster an experience of co-presence – “being there together” (Schroeder, 2002), and generate a simulcrum of the ‘face-work commitments’ that anchor interlocutors or colleagues in meaningful, temporally congruent shared experience (Giddens, 1990). Such technologies can mediate the sense of distancing that is a feature of modern, globalised work practices.

Digital technologies can also function as boundary objects between diverse communities within the organization (Dodgson, Gann and Salter, 2007). For example, Arnie the talking beer vending machine was designed to attract employees into communal areas with the promise of free beer and the opportunity to chat with colleagues. Arnie's chatter was found to foster playfulness and instil a sense of pride and ownership among employees (Arnold Worldwide). Vending machines have also been repurposed to encourage people to visit them, and in so doing, have serendipitously elicited the 'honey-pot effect' of attracting groups of users (Brignull & Rogers, 2003). The 'Break-Time Barometer' – where a system displays how many people are currently in the staff common room, and suggests to colleagues that it would be a good time to take a break - was designed explicitly to persuade people to come out of their offices and socialise more (Kirkham et al., 2013).

Play and Fun

As well as links to increased innovation and productivity (Portland, 2012), academic studies have also linked workplace fun with increased physical wellbeing (Heaphy and Dutton, 2008), job satisfaction (Karl and Peluchette, 2006), and decreased absenteeism (Meyer, 1999). Although, organizational interest in integrating fun in the workplace would appear to be a relatively recent phenomenon - as illustrated by highly innovative organizations such as Google redesigning their campuses - theorizing around the role of playfulness in the organization has long antecedents. In 1976, James March argued that work roles narrowly defined around conformity, bounded competencies, and strict rationality limit workers' ability to be creative and innovative. He distinguishes between technologies of rationality and technologies of foolishness. The latter allows users to temporarily step outside "the logic of our

reason” (p 319); this effect plays a critical role in counteracting impediments to organizational change and learning. Play provides relief from control and managerial coordination, and – rather than something that is inimical or external to work – it can offer a new model for work, where productivity and creativity are symbiotically broadened and enhanced by a greater sense of autonomy and fulfilment (Sutton-Smith, 1997).

In the context of digital technologies, playfulness involves “a temporary sphere of activity to enable exploration and experimentation and a place where people can work and share ideas co-ordinated in space and time by the organization and nature of the technology” (Dodgson, Gann and Phillips, 2013, p4). To this end, organizations are increasingly looking to fun or playfulness as a way of bringing workers together and generating community. However, there are questions over the efficacy and advantages of the somewhat dictatorial approach of ‘organized fun’, given that the very action of forcing fun seems rather counterintuitive (Fineman, 2006). Despite the desirability of fun in the workplace, attempts to engage workers through fun activities can suffer from an unduly prescriptive tenor that oversimplifies the highly-personal and experiential nature of the fun interaction (Bolton & Houlihan, 2009). Moreover, research has shown that workplace humour is resistant to attempts at its functionalization; it remains stubbornly ambiguous, and can serve to obscure rather than resolve disjunctive interests (Malett & Wapshott, 2014). Organized fun can also often involve a symbolic blurring of the traditional delineations of work and non-work, and there is evidence that this strategy can have the unintended consequence of fuelling cynicism among workers (Fleming, 2005).

While the efficacy of forced fun is a contested issue, ‘organic’ fun - an ‘expression of the authentic self’ (Fleming & Sturdy, 2009); spontaneous, context-bound and liberated - is clearly desirable (Baldry & Hallier, 2010). Recent evidence suggests that it is the most important factor - trumping both remuneration and career advancement - for collegiate jobseekers (Tewes, Michel & Bartlett, 2012), and in a demanding workplace context, fun can provide a powerful coping strategy when stress is great (Georganta, 2012). Indeed, many extremely successful companies such as Google have become renowned for designing their physical workplaces to promote fun, interaction, and playfulness (ref). However, organic fun, is, of course, a much more difficult phenomenon to generate than organized fun; it eludes efforts to subvert or control it (Plester, 2009), and managers should simply acknowledge it as a “nicely impossible object that cannot be captured” (Kenny & Euchler, 2012).

In this study, we explore the constraints on community and connectedness between colleagues in this public sector workplace. We investigate whether a low-cost, playful technology installation can create a platform for interaction that transcends common ties such as race, age and physical proximity. We also assess the more diffuse impacts of such an intervention on workers relationship to the organization.

1. What are the key factors that constrain interaction and collaboration constrain between workers in an ethnically-diverse public sector workplace in a economically-challenged borough in London?
2. Is it possible to foster new connections between colleagues through a playful technology installation? What are the key outcomes of such an

intervention, and to what extent does this affect a sense of community in the workplace?

THE CASE STUDY

In this study, we explore the factors that determine community in an ethnically-diverse, public sector organization that operates in one of the most economically-deprived boroughs in the UK. Our study was conducted at the headquarters of a social housing management organization, which are located in a drab office building (hence, to be referred to as 'Building X'). Building X has many anti-social characteristics - tiny kitchens, few meeting rooms, general dilapidation, and few local amenities - and it lacks basic ICT infrastructure, such as WIFI and conference telephones in some meeting rooms. Moreover, the physical problems of the working environment were compounded by organizational issues such as contraction in public sector spending, the impact of chronic austerity on clients, and the febrile atmosphere generated by highly acrimonious local elections. From review of confidential internal staff surveys conducted by HR, it is clear that the organization lacks a strong sense of employee solidarity, community, and cohesion, and a substantial proportion of workers find the workplace generally unsatisfactory in this regard.

In this study, we wished to generate interactions between colleagues, and create a forum for voluntary playfulness that would enable workers to informally interact and engage with each other. To this end, we designed a lightweight, cheap, interactive technology intervention - Mood Squeezer – that would be deployed on all floors of Building X.

METHODOLOGY & TECHNOLOGY DESIGN

This study took place in the four-storey headquarters of a social housing provider in east London, UK. The technology installation ('MoodSqueezer') was comprised of a 'SqueezeBoxes' and 'MoodLights' and they were deployed across four floors of the building for the duration of four weeks in May 2014. The balls are similar in touch to stress balls, and the order and placement was aesthetically driven; bright, complimentary colours were chosen from across the spectrum. There was one simple instruction saying, 'Squeeze the colour of your mood'.

Insert figure 1a & 1b here

We intentionally chose this mood-colour dynamic based on outcomes from a previous exploratory study where a great deal of commentary was generated on the probity of conflating colour and mood (which research has shown to be imbued with cultural influences; see for example, Gage, 2000). We felt that a degree of controversy would be more effective at generating conversations than a less ambiguous instruction. The SqueezeBoxes were controlled by Arduino (sensor) technology and used Force Sensitive Resistors (FSRs) inside each ball to detect when a squeeze was happening. All squeeze data was sent via WiFi to a backend server that processed and logged the squeeze data. In this way, output mechanisms were updated in real-time and one could see how a squeeze immediately affected the light displays.

SqueezeBoxes

The SqueezeBoxes comprised a row of coloured balls (see Figure 1a) that people could squeeze to express their mood. The mapping of mood to colour was deliberately open ended. The intention was to trigger subjective discussions between colleagues

on what mood and colour meant to them, and to allow people to assign their own rules and appropriate the technology in line with their own views. The choice of ball colours and the order and placement of the balls on the SqueezeBoxes was aesthetically driven and bright, complimentary colours were chosen from across the spectrum.

MoodLight Visualisations

The MoodLight visualisations are colourful floor standing lights made from repurposed office lamps and LED strips (see Figure 1b). Output of squeezes was divided into two parts. The top part of the lamp showed a matrix of lights which changed colours based on the colours of recent squeezes: every time a user squeezed a ball on the adjacent SqueezeBox, a random light in this matrix changed to the corresponding colour. The bottom part of the lamp showed a series of lights that represented the history of squeezes over the time of the deployment: on each weekday of the deployment the next light would show the most popular colour for that day, thus filling up the series as the deployment progressed. Each MoodLight only showed output of the adjacent SqueezeBox and not from any other.

To assess the effect of the MoodSqueezer on the interaction between employees in the workplace, we conducted on-line questionnaire surveys and face-to-face semi-structured interviews in two phases: before and after the installation. Participants were recruited by e-mail sent by the contact officer of the collaborating organization. We also held a launch party to promote interests among employees.

The pre-deployment study aimed to understand the nature of the office space, such as how they perceived the workplace in general and how they interacted with other staff.

The pre-deployment survey yielded 101 responses (a 50.5 per cent response rate) and Table 1 shows the respondents' demographics. There were a comparable number of male (47%) and female (54%) respondents, and most of them were aged between 25 and 59 (88%). Many worked with the organization between one and six years (75%) and 59 per cent held the role of officer; and the majority of them worked in open plan office space (93%). Results of the survey were analysed with descriptive statistics. At the end of the questionnaire we also asked if respondents would be interested in further taking part in interviews in April 2014, and 38 agreed to be interviewed (21 women and 17 men). Interviews were held in their workplace in April and May 2014. Each interview took approximately half an hour, and was recorded and fully transcribed. The interviews were coded openly and analysed thematically to capture emergent themes. That is, codes arose from the respondents' own language; these were then built into the categories – e.g. 'community', 'democracy', 'positivity' etc. – that underpin our conclusions. We explained the aims of the study and ensured participant confidentiality and anonymity; only the researchers involved in the study have access to the interview transcripts.

Insert table 2 here

The post-deployment survey received a total of 83 responses (a 41.5 per cent response rate), with a comparable number of male (47%) and female (54%) respondents. Many worked with the organization between one and six years (72%) and 63 per cent held the role of officer; and the majority of respondents (95%) worked in open plan office space (also see Table 1 for respondents' demographic data). This post-deployment survey received 83 responses in June 2014, and we carried out 37 interviews with

people who took part in the pre-deployment interview (20 women and 17 men) in the same month. Both survey and interview data were analysed in the same manner as before.

We also recruited four ‘observers’ who were seated closest to the MoodSqueezer in the office space to record their perceptions of staff interactions with the installations in project diaries. Given that it was not possible to conduct an ethnography due to the limited space in which the installations were deployed, we believed this ‘participant-observation-by-proxy’, would offer useful insight into the reaction to the installations, without fear of contamination of the experience by the presence of an external researcher. The diaries greatly assisted with triangulation of the qualitative and quantitative study data.

Insert table x here

FINDINGS

Pre-deployment

Interview participants were uniformly of the view that community is extremely important from both a personal and professional perspective. A sense of community helps establish bonds, heightens the sense of interdependence, and promotes a feeling of working as part of something larger – rather than narrowly focusing on one’s own job responsibilities:

For us to be able to perform, we have to be linked into the rest of the business. We have to have good relationships. We can't have people being like, 'You're over there, and that's fine'. In my experience, in other organizations as well, the way we do that is through personal relationships, because the difference between me asking you to do something, and you know me and respect me, and someone just behind an email, you know, is vast. ... I think it just makes your productivity increase massively, because there's the synergy then, and everyone's working together. I think it's really critical for the work that I do (R8).

It was common for workers to refer to 'going the extra mile' for a familiar colleague, or temporarily accepting an increased work burden to help a colleague out; interconnectedness was perceived to potentially enable the organization to be more agile and responsive, less bureaucratic and 'less public sector'.

Despite the high regard respondents felt for a sense of community, the survey data suggests that – on aggregate – only an average sense of community was perceived to exist in the building. Indeed, from the table below it seems clear that almost as many respondents disagree, as agree, with the statement "I believe there is a good sense of community in Building X". This suggests a significant variance between workers' experiences.

 Insert table 3 here

Interview participants were also divided over the strength of the sense of community in the workplace. Certainly staff that had been in the organisation for many years felt there had been a marked decline. This was commonly blamed on public sector reform and ongoing austerity, however there was a strong sentiment that the leadership of the organisation was compounding the issue by negative human resource practises:

A lot of people are unhappy about what's happening. ... The workplace has had a number of restructures, and in turn, we've got a lot of temps in on long-term contracts. So there's not that many long, permanent members of staff anymore, and they're looking to employ people on short-term contracts, so it's easier to hire and fire then, isn't it? ... Everybody says you've got your rose-tinted glasses on and all the rest of it, but it was better before. We looked out for each other, and the blame culture, obviously, over the years it seems to me it's more important (R14).

Newer colleagues were often much more positive about the sense of community, however most did speak of the existence of 'communities' rather than community per se. The organization is very ethnically diverse, and distinct groupings formed along religious and racial lines. While these individual groups were themselves imbued with a strong sense of community, there was little interaction with external individuals and cohorts, unless in a formal activity such as the annual conference:

You do have pockets of community. So you've got the ethnicity divide, which isn't prominent, but people sort of seem to feel more comfortable in their own groups of their sort of ethnic background. ... So the group of people, the Asian

guys would have lunch together, go to mosque together on Friday, they'd sit and do their prayers together, and so on. But generally, I mean if there's a wider group opportunities everyone takes part (R12).

Some respondents noted that there was often a negative tenor to the experiences that brought people together. While shared feelings of anger or disappointment can be a strong mutual bond, it seems unlikely that relationships cemented in discontent are likely to pay dividends in increased organizational innovation or success:

I think, too often the thing that binds people in this organization is kind of whinging about things that go wrong. There's a lot of bonding about that. There's a lot of bonding about, 'Well, this person hasn't done this for me,' or, 'Management think this, and this is really bad.' And because we don't really have another set of social connections or another frame of reference when we talk about things, the common connection is work, and overwhelmingly it's the bad things. Which brings everything down (R15).

Furthermore, the local environment in which the building is situated is not overburdened with social amenities, and even though the building provides few opportunities for people to interact socially, those that do exist go largely unused. A large social space with a garden on the ground floor was seen as the preserve of the 'old crew', suggesting that there are informal institutional barriers to accessing the shared facilities. The lack of a widely utilised social space limits the ability of staff to meet each other in a non-work milieu, and can make interactions more difficult for less outgoing individuals:

A lot of people go out to lunch. A lot of people may eat at their desk. I'm guilty of that as well sometimes. There isn't really a meeting point, apart from the breakout area downstairs, but, like I said, nobody knows about it, nobody uses it ... Unless you take the time, or you're quite an open character, and quite confident with people, you may find yourself being or feeling quite isolated at times (R1).

Many respondents also noted that the organization is characterised by a highly-siloed approach in its work ethos. Although there have been a number of initiatives to stimulate a more integrated approach in recent years, in practice, organizational rhetoric espousing institutional coherence often fails to translate into improved collaboration. Time and again, respondents complained of little sense of teams orienting themselves to wider organizational goals; it was common for teams to prioritize their own immediate objectives, even when such actions compromised those of close internal stakeholders:

There's lots of like, for instance, ... Team A don't involve us when they need to involve us, because we're the ones facilitating their workers on the estate. ... Because they're so insular; they're so focused on their own bit, ... And then we have to pick up the pieces afterwards and make it happen... If I found out a month before, rather than two days after, when there's members' enquiries coming in, and complaints, and fights in the street. Of course that affects my health, because I'm having to deal with something at a different level now than having a plan (R33).

However, despite these structural tensions within the organization, respondents did feel that simple, everyday interventions could make a qualitative improvement in the workplace. Sharing simple pleasures such as greetings and general civility were perceived to be highly desirable, and sociability and a stronger sense of community could compensate for failings in the building's aesthetics, facilities, and comfort. Many respondents noted the importance of smiling, good humour, laughter, and sharing a joke:

I think more things can be done to create that element of fun in the workplace and stuff. ... I mean, there's an element of where everyone's really busy, haven't got time and stuff like that, but I think if there was something laid on and stuff, then I think most people would ... enjoy it, so to speak. So yes, yes, I think most people are receptive to that and stuff, and for other people, I think it's breaking down some of that culture that exists. ... I think the organization needs to lay the foundation of some sort from which we're individually and collectively responsible for sustaining that (R10).

Management were aware of these issues, and had taken some steps to re-energise the workplace in a number of ways, such as redecorating part of the office space in bright colours and introducing a ping pong table in an associated site. However, like many public sector organizations, they are highly sensitive and risk adverse in relation to public and stakeholder perception, particularly in light of the impact of austerity on their customers and staff. Although the building was generally perceived to be a reasonably satisfactory workplace, only 20 per cent of survey respondents agreed it

was a fun place to work, and this sentiment was echoed in the interview data. It was common for interview participants to note: 'We're not Google'. However, despite the recognition that the organization was far from the cutting edge in terms of experimental playful practices, there was a broad base of support for fostering a more light-hearted atmosphere and opportunities for relaxation and playfulness. There was an expectation that this would have downstream benefits in terms of innovation and organizational agility:

You spend a vast amount of hours of a week, more time you spend with colleagues than you do with family on a day-to-day basis. It can be a very stressful environment as well. I think the fun element sometimes, it makes the day go quicker and you're building relationships where it can - it doesn't have to all be red tape, and so forth (R26).

Despite the will to lighten the atmosphere in the workplace, we found that a number of complex caveats exist. In order to foster inclusivity in this very diverse organization - composed as it is of many ethnicities and religions; both part-time and full-time staff; diverse age groups and periods of service; those with family and other personal commitment; and those commuting from afar - any events, initiatives or activities must be low cost, on-site, occur during work hours, should not interfere with or penalise uninterested colleagues, should not overly distract from work responsibilities, and should not be based on practices that conflict with cultural or religious preferences of staff members.

Deployment

During the five week deployment, all squeezes were captured along with the time they occurred, the location, and the colour of the ball. Additionally, a snapshot of the current visualisation state was stored every minute. On site observers noted high levels of engagement with the installations, described a positive ‘buzz’ in the office, and noted evidence of playful game behaviour that encouraged conversation and humour among colleagues.

A total of 9674 squeezes were registered during the deployment period (many more occurred but we only counted those between 9am and 5pm). From this total, we wished to identify the number of visits to SqueezeBoxes, and whether users typically squeezed lots of times or only a few times on each visit. Hence, we first analysed the squeeze data for *multi-squeeze* and *single-squeeze* events. We class a multi-squeeze event as 2 or more consecutive squeezes that happen on the same SqueezeBox within 10 seconds of each other, with the assumption that this is most likely one person squeezing multiple times during a single visit. A single-squeeze event is an isolated squeeze with no others in the 10 seconds before or after. Over the four week period the multi-squeeze event count was 1179 with 1920 single squeeze events. To get the total number of visits, we then sum the number of multi and single squeeze events. The result is 3099 individual visits to a SqueezeBox during the deployment. To look at the average number of squeezes per visit, we then divide the visit count by the total number of squeezes, giving 3.1 squeezes per visit. The data also shows that 38% of visits to the SqueezeBoxes resulted in more than 1 squeeze. The maximum number of squeezes performed during a single visit was 105.

Figure 2 shows the squeeze counts for each day of the deployment phase (note that day 6 was a bank holiday and the offices were closed). The graph shows a large spike in usage during the first week due to what Human Computer Interaction (HCI) research refers to as the ‘novelty effect’ (Brignull and Rogers 2003). As expected, usage levels drop over the course of the other four weeks, as the novelty effect wears off. However, even at the end of the 5th week, squeeze counts of around 250 squeezes per day are still being registered.

 Insert figure 2 here

Post-deployment

97 per cent of survey respondents said they interacted with the MoodSqueezer during the five week deployment, and all interview participants confirmed they interacted with the installations. When asked about reactions to the project, the response was predominantly positive, with almost half of survey respondents regarding the deployment favourably, and only 6 per cent stating that they did not enjoy the experience.

 Insert table 4 here

Interview participants also regarded the project positively, and even among those – relatively few - interviewees who thought the installation was ‘pointless’ or ‘silly’, it was common for such respondents to note that the installations did at least improve the space by being ‘pretty’, ‘colourful’, or ‘something different’. Very encouragingly,

93 per cent of respondents stated that they would welcome similar activities taking place in the future.

Many interview participants noted that the initial deployment generated a high degree of interest among staff in the building, and this was particularly evident in the first few days of operation. It was common for respondents to note that interest seemed to drop off after 2-3 weeks, however at least a third of respondents said they interacted with the installations for the full lifecycle of the project. The ‘In-the-wild’ character of the deployment – where little information and no rules were supplied – both attracted and frustrated users:

It generated a lot of interest, a lot of questions about it. Everybody kept on asking ‘what do the colours mean?’ I don't know myself, you know, but ... I think not telling people which colours meant what type of mood, was definitely a good trick, because it generated a lot of interest basically (R3).

They got people talking. People were intrigued by them. There was a lot of discussions amongst people about why they were there, how they worked. People were trying to work out how the lights reacted to the balls, etc. There was obviously a sort of sense of achievement when people worked out ‘ah, I can see how it's influencing the light’, etcetera, as they were appearing throughout the day, so there was a lot of interest. There was a bit of discussion about the colours, what did it mean to feel pink, yellow and what have you. Personality-wise, some people took to that more easily than others, but no, it was interesting (R4).

Even in the case where interview participants were indifferent, confused, or underwhelmed by the project, a number noted that such sentiments often fostered conversation and interaction, and on occasion, a level of subversive reappropriation of the installation:

It possibly united people in frustration, and at one point, one of the balls went missing, and I think somebody left a note on it saying 'Blue means gone for a break!' (R11)

From analysis of the interview, diary, and survey data, we found the installations served a number of functions in the workspace: (1) facilitating new introductions; (2) sustaining longer conversations; (3) promoting gameplay, alliance-formation and friendly competition; (4) cultivating positivity; (5) providing a social lubricant; (6) encouraging democracy; (7) legitimating relaxation/time out; (8) offering stress relief; (9) promoting mindfulness; (10) signalling organizational ambition; and (11) catalysing change.

1. Facilitating new introductions

82 per cent of survey respondents said they talked with other colleagues about the project, and almost one third of survey respondents (30%) said they had talked about the project with a colleague with whom they had never spoken before:

Yeah, I chatted to a guy I didn't know from another floor at the lights, you know, just a bit of banter, but I guess he's someone I know now (R19)

You asked each other questions trying to figure it out. So yes, I spoke to people I wouldn't normally speak to because they were just playing around with it. I was playing around with it. If they were confused, I'd tell them what it was doing, because somebody had told me what it was supposed to do. So I passed it on to the next person (R23).

2. Sustained longer interactions

In addition to facilitating new introductions, many respondents noted that the installations provided useful material for sustaining longer conversations with colleagues with whom they would normally only exchange a greeting or a few brief words:

Everyone was talking about it. Yes, we did actually have a discussion about it, with different people, different departments, different floors. ... I don't think I spoke to anyone with whom I'd never had any interaction at all - partly because there aren't that many of those in the organization - but I definitely had a longer conversation with people who I wouldn't have had a conversation with otherwise about it (R15).

Not so much people that I didn't really know, ... As we came in of a morning, and they saw us lingering around the actual unit, it was like, 'Ah!' And that invoked a little more of a conversation about it. So yes, I did start to talk to people. I did know where they worked - didn't know who they were - but started to become aware of who they were as a result as well, yes (R5).

As the installations were sufficiently topical to sustain longer interactions and facilitated conversations by providing an icebreaker, respondents and the diary keepers frequently noted that it quickly became normal for small groups of people to congregate and chat around the installations.

3. Gameplay, alliances and friendly competition

The squeeze data shows strong elements of gameplay, i.e. multiple squeezing. One employee commented on how gameplay triggered many squeezes per visit:

I think it got inter-floor rivalry about what lights were being used...you'd occasionally walk past and see people standing there...turning every light the same colour (R2).

Interview participants noted that the installations encouraged a sense of camaraderie between colleagues and encouraged employees to talk to one another to discuss strategies for game play or to decide on a preferred colour for the day:

It then quickly went to be like a bit of a battle of wills, a bit of competition, because certain people would like it certain ways, and other people would like those lights in other ways. I particularly disliked it all being one colour, it used to really bother me! I don't know why, it just bothered me, and I wanted it to be all colours. ... I never ever saw whoever was making it one colour. Every time I went out, I felt I had to change it. ... It started to be quite compelling, that I had to change it, so I would sit there squeezing [laughs]. ... It went

from like, 'What on earth is that? What is it there for? What are we supposed to do?' To almost like a sort of power struggle, [laughs] over how it should look! (R37)

Furthermore, some respondents noted how they often interacted with the units so as to 'not let the side' down, and keep up with other floors. Such motivation suggests that having the moodunit fully operational was perceived as a matter of 'floor pride'.

4. Positivity

96 per cent of survey respondents said conversations about the installations were positive or neutral. Interview participants noted that the project contributed to a light-hearted, and positive atmosphere in the building, and the bright colours of the lamps and balls cheered up the rather dark lobby areas:

There was the odd giggle, so if I was walking past and I squeezed it, somebody who was sat there or by the water machine, and they would just laugh. So it did add some positivity. No one was thinking there's a negativity around it; generally there was some positivity. It did encourage some conversations, just smiles and things, so yes (R12).

Well, it definitely got people talking about things which weren't moaning about work. Which is positive. It is a bit of a dead space in the building anyway; it's quite nice to have something there (R15).

5. Social lubricant

Around one quarter of survey respondents (24%) said they found the project to be a useful discussion topic in awkward situations (such as the lift) with acquaintances that they didn't know very well. Two interview participants noted that staff predisposition to make conversation in awkward, transitory public situations functions as a barometer of the openness and friendliness of an organization, so having a non-vapid topic for brief conversation was greatly appreciated. This was also useful when visitors attended meetings in the building:

It's particularly useful as a talking point for external people who come in, taking them into a meeting room. It's that awkward gap where you have to talk about the weather, or your journey, and actually you're talking about squeezing balls instead. Which is good (R16).

6. Democracy

81 per cent of survey respondents said they were unselfconscious squeezing in front of others, and some respondents mentioned a 'democratising' effect. This manifested in a perception that interacting with the installation signalled that an individual was open to conversation of an informal nature, hence some respondents noted that it offered less senior employees a platform to converse with - or share a joke with - senior management when they were present:

We stood there with the head of service squeezing the balls. I told him off for changing my colour! (R5)

I had a really interesting conversation with a senior manager on the train. He's on a different floor. We would normally talk about work on the train, and for the duration of the journey we spoke about the light feature and the balls, and what it meant, and what it was trying to tell us about their floor compared to our floor. So we just sat there, and I said, 'Do you know we've just had a 15-minute conversation about a light display and pink squidgy balls?' ... But it made us laugh, and that was on the way home, so that was quite interesting (R7).

7. Legitimated relaxation/time-out

Many interviewees suggested that they felt that the installations legitimated and promoted taking some time out in the working day. Given that many respondents ate lunch at their desks, and had little reason to move away from their screens other than to use the lavatory, having encouragement to take a break was welcome. Respondents felt that fun, playfulness, and temporary 'non-work' was organizationally legitimated, and even seen as desirable:

To bring people together, to have people talking about something that's not necessarily work-related; something that's fun. So to start some dialogue with people across the board, because it's on every floor, so everyone has got the same type of unit there (R3).

Respondents felt that these opportunities for 'time out' were very welcome and not unduly distracting, particularly given that many personal conversations that began at the installations often digressed into chats about work or congruent matters.

8. Stress relief

A number of respondents described the mood balls as very similar to stress balls, and noted that the tactile nature of the material was quite satisfying to squeeze. Indeed a couple of respondents stated that they would leave their desks if they were feeling particularly stressed, just to go squeeze the balls for a few minutes. In addition, respondents sometimes noted it was particularly satisfying to squeeze a colour that represented a stressed mood at such times; this documenting or recording action provided a positive affirmation:

I think it was just to do with stress management. Initially, I thought it was like a toy or something, to just track your mood; you can just press it and it just reads on there. ... So I thought, that's a wonderful toy, but as time progressed I just used it as a stress thing (R32).

9. Mindfulness

Many interview participants noted that being confronted with the mood question in the morning made them pause and go through a process of self-assessment. This frequently had the effect of making them think about changes that could be instituted to improve how they were feeling:

I think the main positive is something about getting people to think and be more self-aware around their mood (R16).

Furthermore, it was common for respondents to note how novel and welcome it was to share mood or personal reflections with colleagues at the installations; exchanging these sentiments fostered the sensation of interconnectedness and community:

R32 - We'll all be there squeezing the colours, you know, the mood we're feeling in at that time. It was kind of a laugh. To be honest, I suppose it brought us together in a way, to talk about our moods, because a lot of the time you don't know how people are feeling.

10. Organizational ambition

A number of respondents noted how pleased they were for the organization 'to be doing something different'. When questioned about this, few were able to offer insight into what particular advantages this offered. However there was a general sense the organization could be quite uninnovative, risk adverse, and institutionalized, and participating in the mood project countered this perception to some degree. It signalled to staff that leadership were open to some degree of experimentation in the workplace.

I think just fundamentally if companies are doing stuff - even if it's stupid stuff or even if they're relevant, or even if people don't understand them - as long as the company is doing things, or as long as the things are happening around, it's an interest and it's something new. It's a talking point and it makes people's brains work so I think it's pretty good (R2).

11. Catalyst

Interview participants also felt that the project had the ancillary effect of stimulating discussions about other innovations or creative approaches that could be implemented in the workplace:

I think for one thing, it's got us talking about what would be a good addition to the workplace. Following on the first interviews where I was talking about there's not enough sort of breakout areas, there's not enough places like lounge areas, places where you - like the kitchens are awful. So it's got a lot of people talking about how to make the workplace more sort of inclusive, positive and fun. Which I think is a good thing (R16).

These eleven functions of the mood installation show that lightweight, playful technological interventions can have a profound effect on the workplace, and can have unusual and unforeseen impact surpassing the original, direct intention.

DISCUSSION & CONCLUSION

The study findings demonstrate that the installations were perceived to offer a strong indication that 'play' is welcome, and indeed, valued in the workplace. To certain degree, the installations generated a perception that leadership was exploring the idea of a more egalitarian workplace, where individuals from any role can come together and participate in 'play'. We believe that respondents felt that the project indicated that leadership was in favour of ceding a greater degree of autonomy and trust to employees, given that the participation in the project indicated a break from management's more traditional practices of coordination and control (March, 1976), which many respondents felt had, to date, defined the day-to-day operation of the organization. The installations signalled to employees that periods of 'non-work' were

acceptable, and that these should be self-regulated. Respondents felt that personal engagement with installations by members of the management team indicated a willingness to interact with staff on a less hierarchical basis than would normally characterize work-based relationships, suggesting that leaders were open to a more democratic and informal engagement in specific circumstances or situations.

The technology installations were well received by the majority of staff, worked well in accordance with the constraints identified in the pre-deployment study, and had a positive effect on the workplace environment. Although the pre-deployment survey shows evidence of negativity towards the workplace and the organisation more generally, survey and interview participants demonstrated an enthusiasm for organic and organized fun in the office, including social events and team building. Data from the post-deployment study show that there is a broad appreciation and acknowledgement of the social aspects of work - for example, the importance of play and 'non-work' - for fostering the weak ties that are crucial for knowledge-sharing within an organization. Indeed, many of the conversations that started about the installations often diverged into work conversations; perhaps these discussions would never have happened, without the presence of installation acting as an encounter-catalyst.

We believe that the installations were particularly successful due to their voluntary nature; they provided an icebreaker, and could be utilised with or without a partner(s). The literature on generating weak ties has shown that individuals often struggle to mix with other people, even where they have acknowledged an express intention to do so; the installations in this study provide an extremely low barrier to engagement that

can be terminated without awkwardness or offence on either side. For a broad base of users, we believe the low barriers to participation and non-specific duration of any interaction reduced inertia and anxiety in respect to engagement with the devices and with other users. Hence, many users reported diverse usage patterns ranging from routine interaction when entering and exiting the building, to the formation of competitive alliances striving to achieve a negotiated daily outcome. Multiple squeezing and gameplay are very encouraging outcomes, as re-appropriation often hints towards high levels of engagement and a sense of ownership of the technology (Dourish 2003). Moreover, the installations encouraged individuals to exchange personal views on the connection between mood and colour. Conversations with such high levels of subjective exchange - High Quality Connections (HQC) - are believed to be a crucial first step in creating stronger and more long-term relationships between individuals (Dutton & Heaphy 2003). Such relationships contribute towards the social exchange expectations inherent within a satisfactory workplace experience (Rousseau and Parks 1993). Given that the pre-deployment study suggested that community occurred mostly in siloes bounded by traditional delineations such as race, we believe the goal of the project to develop an intervention that would generate and sustain interactions transcending these clusters was achieved. Heterogeneity within community in the workforce promotes knowledge sharing and organisational learning (Brown and Duguid, 1991), and given that many respondents had interactions with new or little known colleagues, we believe the installations functioned to bridge some of the endemic social interaction patterns which devolve from the micro-communities that exist within the building.

Finally, the project was also primarily concerned with generating a light-hearted, positive and playful atmosphere in the working environment, rather than strictly focused on adoption of the technology itself. From diary evidence and interview data, we believe this was achieved, given that many respondents noted how they often smiled when seeing colleagues interacting with the units, and that there was a ‘buzz’ in the office space. The study found broad approval among respondents for the sense of openness, experimentation and creativity that organizational participation in the project demonstrated. The ‘something different’ effect was felt to be extremely refreshing in connection with a workplace that many had suggested was quite staid and ‘public sector’, hence, the installations galvanised and inspired colleagues to think about new practices or initiatives that could better foster community or help deliver other strategic objectives. Legimitated play encouraged workers to be proactive in thinking about improving the sense of community; this generated a degree of self-motivation and agency to consider wider organizational changes that would lead to greater productivity through increased ease of search and knowledge-sharing. We believe the installations functioned as a useful bridge between organized and organic fun, in that they created an opportunity for playfulness and interaction, without being prescriptive or interfering with uninterested individuals’ workplace experience. While such as installation as developed in this study will clearly always be of ephemeral duration, we believe that such technologies can have a powerful and transformative effect in a broad range of applications.

Table 1. Profile of the Questionnaire Survey Respondents

		Pre-deployment (%*)	Post-deployment (%*)
Gender	Male	46.5	46.5
	Female	53.5	53.5
Age group	16-24	9.4	11.3
	25-34	27.1	23.9
	35-49	38.8	47.9
	50-59	22.4	15.5
	60+	2.4	1.4
Length of Employment	Less than 1 year	12.9	12.7
	1-3 years	39.8	35.4
	4-6 years	35.5	36.7
	7+ years	11.8	15.2
Role	Section head	9.7	7.6
	Team leader/Manager	22.6	20.1
	Officer	59.1	63.3
	Other	8.6	8.9
Floor	1 st floor	27.2	28.8
	2 nd floor	23.9	23.8
	3 rd floor	27.2	25.0
	4 th floor	21.7	22.5
Open Space vs. Private Office	Open Space	92.5	94.9
	Private Office	6.5	5.1
	Other	1.0	0.0

*Percentages of eligible responses.

Table 2 - Coding scheme

Grouped themes	Themes	Description
Constraints on physical interaction in the building	Race, religious & cultural issues	Bonding capital within groups, but little bridging capital across groups
	Age & period of service	Variance in time workers had spent at organization; Age of workers
	'Email culture' & Weak interunit linkages	Prevalence of use of ICTs to interact rather than face-to-face
	Eating at desk etc	Institutionalization of anti-social free time practices
	Prioritising team goals	Little sense of cohesion across teams in organization
	Built environment	Physical barriers to interaction in workspace e.g. small kitchens
	Unclear merit	Little perception of value to managers
	Bounded work roles	Little opportunity to interact with others through work
Impact of installation	Democracy	Egalitarian platform for interaction
	Agency, self-motivation, & active engagement	Offered respite from traditional management practice of control & coordination
	Stress relief	Deriving fun from driving
	Positivity & openness	Lightened the environment and made change/improvement seem possible
	Relaxation	'Non work'; time-out, social activity

	Stimulating connections	Fostering new interactions and sustaining conversations
	Social lubricant	Ameliorating awkward encounters

Table 3 ‘I believe there is a good sense of community in Building X’.

Answer		Response	%
Strongly Agree		1	1%
Agree		31	35%
Neither Agree nor Disagree		29	33%
Disagree		27	30%
Strongly Disagree		1	1%
Total		89	100%

Table 4 ‘It was enjoyable to have the mood balls and lights in Building X.’

Answer		Response	%
Strongly Agree		6	8%
Agree		39	55%
Neither Agree nor Disagree		22	31%
Disagree		2	3%
Strongly Disagree		2	3%
Total		71	100%



Figure 1a & 1b Mood units and lights

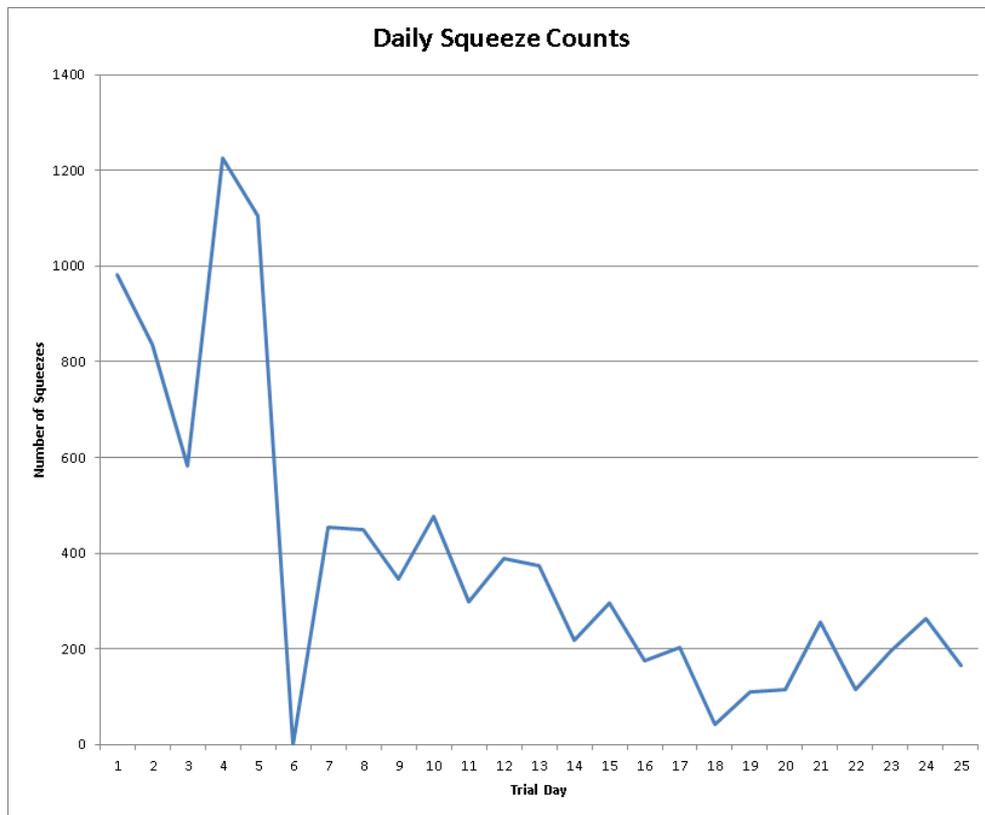


Figure 2 Daily squeeze totals (between 9am-5pm)

REFERENCES

- Adler, P. S. & Kwon, S. W. 2002. Social Capital: Prospects for a new concept. *Academy of Management Review*, 27(1): 17-40.
- Adler, P. S., Kwon, S. W., & Heckscher, C. 2008. Professional work: The emergence of collaborative community. *Organization Science*, 19(2): 359-376.
- Argote, L. & Miron-Spektor, E. 2011. Organizational learning: From experience to knowledge. *Organization Science*, 22(5): 1123–1137.
- Arnold Worldwide, Arnie the beer vending machine, online:
<http://thefurnace.com.au/creative/work/worlds-first-social-beer-vending-machine>
- Baldry, C. & Hallier, J. 2010. Welcome to the house of fun: Work space and social identity. *Economic and Industrial Democracy*, 31: 150-172.
- Bolton, S. C. & Houlihan, M. 2009. Are we having fun yet? A consideration of workplace fun and engagement. *Employee Relations*, 31(6): 556-558.
- Blumer, M. L. C., Green, M. S., Murphy, M. J. & Palmanteer, D. 2007. Creating a collaborative research team: Feminist reflections. *Journal of Feminist Family Therapy: An International Forum*, 19(1): 41-55.
- Brignull, H., & Rogers, Y. 2003. Enticing people to interact with large public displays in public spaces. *Proceedings of INTERACT*, 3: 17-24.
- Brown, J. S. & Duguid, P. 1991. Organizational learning and communities of-practice: Toward a unified view of working, learning, and innovation. *Organization Science*, 2(1): 40–57.
- Burt, R. S. 1992. *Structural holes: The social structure of competition*. Cambridge, MA: Harvard University Press.
- Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology*, 46(4): 823-850.
- Coleman, J. S. 1988. Social capital in the creation of human capital. *American Journal of Sociology*, 94 (Supplement): S95-S120.
- Dodgson, M., Gann, D., and Salter, A. 2005. *Think, play, do: Technology, innovation and organization*. Oxford, UK: Oxford University Press.
- Dodgson, M., Gann, D., and Salter, A. 2007. In case of fire, please use the elevator: Simulation technology and organization in fire engineering. *Org. Sci.* 18 (5): 849-864.

- Dodgson, M., Gann, D. & Phillips, N. 2013. Organizational earning and the technology of foolishness: The case of virtual worlds at IBM, *Organization Science*, 24(5): 1358 – 1376.
- Dourish, P. 2003. The appropriation of interactive technologies: some lessons from placeless documents. *CSCW*, 12, (4): 465-490.
- Dutton, J. E., & Heaphy, E. 2003. The power of high-quality connections. In K. S. Cameron, J. E. Dutton & R. E. Quinn (Eds.), *Positive organizational scholarship: Foundations of a new discipline*: 263-278. San Francisco, CA: Berrett-Koehler.
- Easterby-Smith, M., Crossan, M., & Nicolini, D. 2000. Organizational learning: Debates past, present and future. *Journal of Management Studies*, 37(6): 783–796.
- Edmondson, A. C., Bohmer, R.M., & Pisano, G.P. 2001 Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly*, 46(4): 685–716.
- Fineman, S. 2006. On being positive: concerns and counterpoints. *Academy of Management Review*, 31(2): 270-291.
- Fleming, P. 2005. Workers' playtime? Boundaries and cynicism in a 'culture of fun' program. *Journal of Applied Behavioral Science*, 41: 285-303.
- Fleming, P. & Sturdy, A. 2009. 'Just be yourself!': Towards neo-normative control in organizations? *Employee Relations*, 31: 569-583.
- Gabbay, S. M. & Zuckerman, E. W. 1998. Social capital and opportunity in corporate R&D: The contingent effect of contact density on mobility expectations. *Social Science Research*, 27: 189-217.
- Gage, J. 2000. *Color and Meaning: Art, Science, and Symbolism*. Oakland, CA: University of California Press.
- Gardner, H. K. & Valentine, M. 2014. Instrumental collaboration: Why autonomous professionals collaborate and how they benefit. *Proceedings of the Academy of Management*, 1: 11880.
- Granovetter, M S. 1973. The strength of weak ties. *American Journal of Sociology*, 78, (6): 1360-1380.
- Georganta, K. 2012. Fun in the workplace: A matter for health psychologists? *The European Health Psychologist*, 14(2): 41-45.
- Haas, M.R. & Hansen, M.T. 2005. When using knowledge can hurt performance: The value of organizational capabilities in a management consulting company. *Strategic Management Journal*, 26(1): 1-24.

- Hansen, M. T. 1999. The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, 44: 82-111.
- Ingram, P. & Morris, M. W. 2007. Do people mix at mixers? Structure, homophily and the 'life of the party', *Administrative Science Quarterly*, 52: 558-585.
- Kang, S.C., Morris, S.S., & Snell, S.A. 2007. Relational archetypes, organizational learning, and human value creation: Extending the human resource architecture. *Academy of Management Review*, 32, (1), pp236–256.
- Karl, K. & Peluchette, J. 2006. How does workplace fun impact employee perceptions of customer service quality? *Journal of Leadership & Organizational Studies*, 13 (2): 2-13
- Kenny, K. & Euchler, G. 2012. 'Some good clean fun': Humour, control and subversion in an advertising agency. *Gender, Work & Organization*, 19: 306–323.
- Kirkham, R., Mellor, S., Green, D., Lin, J.S., Ladha, K., Ladha, C., Jackson, D., Olivier, P., Wright, P., and Plotz, T. 2013. The Break-Time Barometer – An Exploratory System for Workplace Break-time Social Awareness. *Proc. of the 2013 ACM International Joint Conference on Pervasive and Ubiquitous Computing*: 73-82.
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., Scherlis, W. 1998. Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53 (9):1017-1031
- Levin, D. Z., & Cross, R. 2004. The strength of weak ties you can trust: The mediating role of trust in effective knowledge transfer. *Management Science*, 50 (11) :1477-1490
- Mallett, O. & Wapshott, R. 2014. Informality and employment relationships in small firms: Humour, ambiguity and straight-talking. *British Journal of Management*, 25: 118–132.
- March, J. G. 1976. The technology of foolishness. In J. G. March & J.P. Olsen (Eds.) *Ambiguity and Choice in Organizations*: 69-81. Oslo, Norway: Universitetsforlaget.
- Meyer, H. 1999. Fun for everyone. *Journal of Business Strategy*, 20(2): 13-17.
- Pentland, A. 2012. The new science of building great teams. *Harvard Business Review*, 90 (4): 60-70.
- Plester, B. 2009. Crossing the line: Boundaries of workplace humour and fun. *Employee Relations*, 31: 584-599.

- Putnam, R. 2000. *Bowling Alone: The collapse and revival of American community*. New York & London: Simon & Schuster Paperbacks
- Rousseau, D. M. & Parks, M. J. 1993. The Contracts of Individuals and Organizations, In B. M. Staw & L. L. Cummings (Eds.) *Research in Organisational Behaviour*: 1-47. Greenwich, CT: JAI Press
- Schroeder, R. 2002. Social interaction in virtual environments: Key issues, common themes, and a framework for research. In R. Schoeder (ed.) *The social life of avatars: Presence and interaction in shared virtual environments*: 1-39. London: Springer.
- Simon, H. A. 1991. Bounded rationality and organizational learning. *Organization Science*, 2(1): 125–134.
- Strömberg, S., & Karlsson, J. C. 2009. Rituals of fun and mischief: the case of the Swedish meatpackers. *Employee Relations*, 31: 632-647.
- Sutton-Smith, B. 1997. *The Ambiguity of Play*. Boston, MA: Harvard University Press.
- Tewes, M. J., Michel, J. W. & Bartlett, A. 2012. The fundamental role of workplace fun in applicant attraction. *Journal of Leadership & Organizational Studies*, 19: 1105-1114.
- Townsend, A. M., DeMarie, S. M. & Hendrickson, A. R. 1998. Virtual teams: Technology and the workplace of the future. *Academy of Management Executive*, 12 (3): 17-29.
- Tsai, W., & Ghoshal, S. 1998. Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41: 464-478.