Guest editorial

Rethinking work through (work)spaces current issues for organizational change and workplace learning

The current global health crisis forced a considerable number of employees to switch – sometimes rather abruptly – to remote working [1]. In a sense, the COVID-19 crisis displaced workplaces, un-made established routines and social settings, by re-placing work in another, usually separate and a more or less structured environment. This unexpected experience of displacement somehow brought light to the organizing power of (work)spaces. "How space matters?" at work is a question whose answer often eluded professionals and researchers. As Yanow (2010, p. 139) puts it:

> Scientific discourse requires words; but space is wordless, as are our experiences of it [. . .] spaces do not announce themselves through verbal language, they are more easily rendered "neutral" for academic practice, beyond the analytic gaze.

While indeed no activity can take place without space, the spatial context of activity is rather naturally and unproblematically seen as an "arena" for human action which contains or alternately determines its course. When it does not hold, one realizes that sharing and togetherness in space provide, among other things, considerable support and resources for cooperation and coordination practices. Those are not so easily translated into remote working and invites us to consider why does space matters after all for work, organizing and workplace learning.

Space is increasingly acknowledged as an essential part of workplace learning (Hopwood, 2014) and has been a major issue for organizations from the beginnings of salaried employment. Whether in factories or in modern offices all the way through Taylorism, workspaces have always been considered by managers and engineers as a means for achieving greater productivity and improving work efficiency. Today's ICT-based work and related flexible organizations promote an employable and autonomous worker (Boltanski and Chiapello, 2007), who is alone responsible for meeting the expectations of the organization (and facing the possible mismatch between the available resources and the increasing demands at work). In this context, employees may have fixed working hours (unity of time) without having a fixed workspace (unity of space). The increasingly distributed nature of modern workplaces goes along with both higher and much broader demands: make optimum use of available resources, effectively use and expand networks, be flexible, be available around the clock, tackle challenges while evolving around an ever-changing globalized working environment. As Boltanski and Chiapello (2007) put it, today's worker lost his bearings and became « lighter » as "streamlined people can root themselves only in themselves ('the self-enterprise') – the sole instance endowed with certain permanency in a complex, uncertain and changing world" (pp. 124–125).

Today, a growing number of modern companies (re)considers workspace design and layout as a mean to support and manage organizational change, knowledge-sharing and workplace learning of professionals and teams [2] (De Vries et al., 2008; Appel-Meulenbroek, 2014; Lai, Bobillier-Chaumon, Vacherand-Revel and Abitain, in this volume) and chose to (re) design their workspace: open, flexible, without assigned seating enabling, thus employees to take the position that best fit their needs. The rise of co-working spaces and related practices is yet another facet of this phenomenon (Leclercq-Vandelannoitte and Isaac, 2016; Spinuzzi et al., 2019; see Ivaldi, Galuppo, Calvanese and Scaratti, in this volume).

Psychological and organizationa l[3] literature has rarely considered materiality (Kornberger and Clegg, 2004; Orlikowski, 2007) and especially space, as an integral part of organizational life and workplace individual and collective experience. Workspaces characteristics (in terms of layout, noise, light) are at best featured as components of the physical working conditions and studied in relation to occupational hazards, stress (Burke, 1988; Evans and Cohen, 1987) or job performance and satisfaction (Vischer, 2007). Current evolutions in workspace design and management call for important theoretical and empirical research in work and organizational psychology and related disciplines on space as embedded within activities and as an object of study in its own right (Ianeva *et al.*, 2017). Given the growing importance of the above-mentioned current trends in the workplace, both practitioners and academics need to deepen their understanding of the way that (work)space – in its physical, social and organizational characteristics – triggers learning and development of the workers' power to act on their work and upon themselves (Clot, 2009). Furthermore, workspace design and management thought of as an integral part of emergent organizing practices questions interventionist approaches and more broadly interventions in the workplace.

From an interventionist perspective – which is also the perspective of the authors of this special issue – workplace learning is considered as inherent of any activity. More importantly, the relationship between workplace learning and the development – of the work situation and the subject – is always to be considered as embedded within the activity. French-speaking ergonomics and work psychology have indeed developed a specific understanding of the concept of activity and its analysis (Wisner, 1995) which is both convergent and quite different from that of other activity-oriented approaches [4] (Daniellou, 2005; Daniellou and Rabardel, 2005). Yet, activity-oriented approaches share at least two common characteristics: the reference to the founding works of Vygotsky and Leontiev (see for instance Leplat, 2008; Engeström, 1987/2015; Cole, 2005) and the focus on the transformation of work practices. The aim of activist and interventionist approaches is to transform work situations, develop the practitioners' power to act upon their work conditions or reduce psychosocial risks and musculoskeletal disorders (MSDs). While all of the contributions of this special issue share a concern for generating a practice-relevant knowledge, they all refer to different research and interventionist traditions – clinic of activity, reflexive dialogical action research, situated cognition and action models – and, therefore cover different intervention-related objectives. While the clinic of activity seeks to bring change into the rules, procedures, tools and organization of work in order to understand the activity of the practitioners (Clot, 2008), situated action and cognition models, as well as action-research, bring to the fore understanding before transforming practices.

Thus, this special issue gathers academics and practitioners and aims at opening up a theoretical and methodological discussion on several critical issues related to the (re)design, the appropriation and management of work and workplace learning through workspaces. How could the design of work environments effectively support professional activities and workplace learning? In what ways workspace design and organization could trigger learning processes and support competence development? What are the theoretical frameworks and concepts relevant in understanding space in its physical, social and organizational characteristics? Do activities simply fill in the provided spaces or are they constitutive of space as an ongoing process, a relational construct rather than a static container (Yaneva and Guy, 2008; Vásquez and Cooren, 2013)?

The four contributions of this special issue, provide a basis for a theoretical and epistemological debate among disciplines such as work and organizational psychology, cultural-historical activity theory, ergonomics and clinic of activity. Each one of the papers

engages the reader with a different way of understanding and/or acting upon (work)space in its psychological, social and organizational dimensions. The issue includes the presentation of empirical research (Lai, Bobillier-Chaumon, Vacherand-Revel and Abitain and Ivaldi, Galuppo, Calvanese and Scaratti) and workplace interventions (Quillerou and Boulnois and Ciobanu) that highlight practical and intervention-related issues.

We start with the premise that space should be considered as embedded within activities, that of IT professionals (Lai, Bobillier-Chaumon, Vacherand-Revel and Abitain), of co-working spaces managers (Ivaldi, Galuppo, Calvanese and Scaratti), of airline pilots and designers (Quillerou and Boulnois) or nuclear plants workers (Ciobanu). A focus on activities foregrounds the idea that experience and knowledge of space are not directly accessible but always mediated by cultural means, both signs and artifacts. This focus is also rather consistent with a relational and processual understanding of space (see for instance Yaneva and Guy, 2008; Vásquez and Cooren, 2013; Hopwood, 2014) – that is to say, space is seen as a construct rather as a backdrop or a container.

Overview of the contents of the special issue
This special issue focuses on the workplace as a complex learning environment. It includes four contributions. The first two contributions (Lai, Bobillier-Chaumon, Vacherand-Revel and Abitain and Ivaldi, Galuppo, Calvanese and Scaratti) deal with the current rising phenomenon in workplaces such as "activity-based" flexible offices and co-working practices. Both papers present qualitative studies and rich empirical materials that provide a basis for challenging the prevailing managerial and even academic discourses on the "New Ways of Working" (NWOW). The two remaining contributions (Quillerou and Boulnois and Ciobanu) cover different areas of professional practices – such as engineers and airline pilots, as well as nuclear plant employees and infrastructure developers (or engineers) – and tackle the design of complex social and technical systems. Workspace is considered in its material, social and organizational characteristics, both an object of study and as a means for individual and social development and learning.

Lai, Bobillier-Chaumon, Vacherand-Revel and Abitan report on a study conducted within an IT company, which has implemented an "activity-based" work environment (ABW). These office solutions rely on desk-sharing and an extensive range of workspaces, designed to fit specific user needs such as collaboration, concentration, creativity. Employees are free to choose whatever desk or workspace they need. They are also expected to apply a clean-desk policy throughout or at the end of the day to ensure efficient use of shared office resources. The design and implementation of ABW involve significant changes in employees' work practices, especially when users have worked in a "classical" work environment so far. Lai, Bobillier-Chaumon, Vacherand-Revel and Abitan build upon the situated acceptance model (Bobillier-Chaumon, 2013) to understand how activity-based workplaces support or, on the contrary, impede on employees' individual and collective activities. The situated acceptance model draws upon different lines of research, including developmental approaches such as cultural-historical activity theory (Engeström, 1987/2015; Clot, 1999) and ergonomics (Rabardel, 1995). In their study, Lai, Bobillier-Chaumon, Vacherand-Revel and Abitan start from the premise that workplaces, considered as artifacts, play an essential role in the development of their users' activity. The authors consider space and the activity-based offices in particular not merely as a "neutral physical and spatial support for activities" but rather as "real working tools which embed rules and values that guide the professionals in their work." The study relies on a two-phased qualitative methodology (semi-structured interviews, observation, photo-elicitation) and highlights different uses of the activity-based workspace typology. It also shows the strategies of appropriation of individuals and collectives. The contribution of the paper is both theoretical

and empirical. The theoretical model that the authors used has been initially developed in the context of the design, the implementation and the appropriation of ICTs. One of the contributions of this paper is precisely discuss the potential of the situated acceptance model in providing insight into the activity-based working and the issues it brings in. Throughout their paper Lai, Bobillier-Chaumon, Vacherand-Revel and Abitain convincingly show that this model offers an interesting way of conceptualizing workplace learning in relation to space in terms of situated acceptance and appropriation.

Ivaldi, Galuppo, Calvanese and Scaratti focus their contribution on the analysis of the coworking phenomenon and present an ongoing action-research within a network of co-working spaces based in northern Italy. The authors first highlight the socioeconomic transformations underpinning this ever-growing phenomenon – co-working spaces emerged as a response to the needs of an evolving, globalized and increasingly flexible labor market but gradually acquired, as Ivaldi and al. point out in their paper, "multifaceted and multiple meanings that have been translated into diverse material configurations and different produced values and outcomes." In other words, despite the growing amount of research on the coworking phenomenon, these workplaces are still difficult to grasp as they refer to different symbolic and physical configurations that both structure and are structured by the activities of those who use and manage them. Today, co-working spaces gather different sorts of professionals that do not necessarily share the same occupation or organizational status but are using the same working facilities. While literature puts a considerable emphasis on the potential of these workspaces in promoting learning and knowledge-sharing as a result of merely "working-alongside others," the authors have shown in previous research that different interpretations of the coworking space can give rise to diverse coworking activities. Four types of coworking spaces were, thus, identified, namely, "infrastructure," "relational," "network" and "welfare" coworking. The contribution to this special issue focuses on a specific type of coworking – the "welfare coworking" which refers to spaces that display "solidarity-oriented" objectives and appear as closely intertwined with local territories and communities. As such, this kind of "in-between" spaces is of special interest for further elaborating on the boundaries of workspaces and their making. Drawing upon a qualitative study, Ivaldi, Galuppo, Calvanese and Scaratti present different interpretations of "solidarity-oriented coworking" in terms of inclusiveness, mutuality and active citizenship which put specific challenges to the managers of the coworking spaces. The results highlight the way the welfare-oriented interpretation of coworking is "put" into practice by the actors involved in the network. Well-bound meanings find themselves continuously (re)negociated in practice. Furthermore, different interpretations of the value proposition of coworking relate to conflicting "perspectives" on coworking – collective vs individualistic – which the authors trace back to the beginnings of the coworking phenomenon and its original project. The empirical case presented by Ivaldi, Galuppo, Calvanese and Scaratti strongly pleads in favor of focusing on the coworking activities and their development rather than on the material characteristics of coworking spaces.

While the first two papers are dealing with an emerging trend in the workplace – activity-based working, co-working – the two remaining contributions focus on the design and implementation of social and technical systems. They address workspace as an integral part of the socio-material process of design.

Quillerou and Boulnois draw upon transdisciplinary research that combined a Human-Centered Design (Boy, 2013) engineering approach with occupational psychology, more specifically a "Clinic of Activity" approach (Clot, 2009). This later developmental perspective focuses first on the transformation of work activities to enable the professionals to act upon their work situation. Subsequently to the intervention, the aim is to produce relevant

scientific knowledge, and thus to contribute to psychological science. The researcher is both an observer and an active part of this psychological process as he/she strives to « burden [5] » the subjects involved in the intervention so as to enable them to think of work as embedded into a work collective, sharing a common history and experiences – including the experience of controversies on what makes "good work" in that particular work setting. In the clinic of activity perspective, the conflict – on work-related issues – is not the problem but the solution. The contribution of Quillerou and Boulnois deals with the design of a Weather forecast system for airline pilots and highlights how cross self-confrontation interviews (Clot, 2008) – a method typically used within this the Clinic of Activity framework – under special space conditions triggered and supported the dialogue between the designers and the pilots. The underlying assumption of this study challenges conventional design processes in several ways: the aim is to use the analysis of the activity of airline pilots as the basis for the design of a similar "dialogical" experiment with the engineers. The dialogues, debates and controversies between the pilots that volunteered to take part in the analysis of their activity provide them with resources for engaging in a new dialogical cycle with the engineers of the technical system. In a sense, the contribution of Quillerou and Boulnois reports on what we may consider as social and dialogical experimentation based upon the analysis of the work activity and aimed at improving the safety of commercial flights and the occupational health of the pilots. By triggering discussions and misunderstandings during the dialogues, first between pilots, then between the pilots and the engineer, the researchers intend to support the developmental process and the implementation of the Weather forecast system. Results also bring out the specific "uses" of space by researchers, designers and pilots during the work analysis and design of the system in the cockpit. More specifically, the practitioners make extensive use of the relationship between the sensorimotor space of the body and the extra-corporal space (Paillard, 1991) – that is to say the body position, the body movements and use of the artifacts – to support their point of view and line of argument. Simultaneously, these spaces become a mean to open up new dialogical spaces on unexpected work-related objects and issues which were not previously considered by engineers in the design process. Thus, the dialogical activity between professionals brings into play the motor, physical, psychological and social spaces in unexpected ways, which, in turn, enable the practitioners to explore new avenues for improving, adapting and transforming the Weather forecast system. In our view, following Vygotsky (1978, p. 65) it is only in movement that the spaces show what they are and what they can become [6]. The contribution of this paper is precisely to account for that "movement." As shown by Quillerou and Boulnois, for the Clinic of Activity learning and development are closely intertwined with dialogues and interactions as a means for supporting key developmental social and psychological processes. Thus, this approach brings to the fore spaces as a resource in the individual and collective elaboration of the work activity. Throughout the intervention, space is considered as a means for triggering the controversies arising during the dialogues in the intervention sessions and sustaining the dialogical conflict on the quality of work between the professionals.

Ciobanu addresses the development of employees' competencies in the nuclear industry. The effective training of nuclear service providers is one of the major challenges that face EDF, the manager of the French nuclear-generating capacity and that for several reasons: the extension of the lifespan of French nuclear power plants and consequently, the multiplication of the maintenance operations on existing facilities, the generational renewal of skilled and experienced workers, as well as the stringent security and safety requirements. In this context, the paper focuses on the design of professional training in a "bottom-up" "activity-based" approach. The author builds on situated cognition and French

ergonomics and starts from the premise that analysis and an in-depth understanding of the work activity at hand are of great importance for the design and implementation of an effective training system. Her research challenges simplistic and "common-sense" assumptions about learning in terms of "transfer" or "acquisition" and emphasizes the dynamic nature of workplace learning as part of ongoing practices instead. Following Lave (1988), Ciobanu distinguishes different "activity spaces," namely, the artefactual, organizational and relational space. She draws upon an original three-phase methodology (pre-design, design and experimentation and post-design) and studies the role of these spaces (organizational, relational and artefactual) for the purpose of efficiently training maintenance providers. The analysis of the results brings to the fore the way workspaces in their physical, organizational and, more broadly, social characteristics support the development of competencies and improve vocational training. In the case Ciobanu presents, the training participants take part in the simulation of a work operation as part of a scenario, which includes several dilemmas the trainees have collectively manage and resolve. Thus, during the training session, they have to orient themselves in an artefactual space, as well as in relational and organizational spaces. The results of the experiment confirm the relevance of providing different pedagogical orientations that emphasize the activity over the previous task-oriented and top-down approaches. They support a number of studies and highlight the underpinnings of professional training's effectiveness as relying on acquired and reproducible knowledge and skills but also on their appropriation in real work situations – that is to say on an imitation which does not strictly follow but "displaces" the original model. In other words, effective training must "circulate" between reproduction and creation. Dilemmas – as part of the work-related scenarios of the simulated operations – provide a basis for putting work into perspective as the trainees and the trainer discuss the different possible options and choices to be made. Thus, resolving dilemmas brings light to the organizational, artefactual and relational spaces. Moreover, in our view, the analysis shows how these spaces become psychological tools in support of the work activity. The contribution of Ciobanu prompts us to consider training as a "paradigmatic" situation when understanding the relationship between activity and spaces at work: the activity of the subjects that face a dilemma requires the production of what we may call following Vygotsky (1978), psychological instruments – such as, in this case, the organizational, artefactual and relational spaces – but, in turn, the simulation of work situation itself, is another activity, that contributes to the creations of new functional relations between these instruments.

Conclusion and future work
This special issue deals with a timely topic – the (re)design and management of workspaces as embedded within activities. Indeed, a central premise of our work is the idea that moving or setting up an office is as much a matter of aesthetics or functionality that a matter of organizing and redesigning work and activities. In other words, while real estate projects are an obvious concern to space planners, designers, engineers and real estate executives, they are much less considered as an "assignment" for work and organizational psychologists and workplace interventionists. However, as the contributions of this special issue tend to show, moving workplaces engage the individuals and collectives at work in a singular way and has the potential to transform or expand their understanding of their work.

As mentioned in the introduction of this editorial, "space" is an object of study that remains difficult to grasp. One of the contributions of the issue is to provide a basis for bringing "space" into the "analytical gaze" (Yanow, 2010) of academics and practitioners. In our view, this requires the analysis of the activities of the practitioners. The concept of

"activity" is herein understood in the light of different lines of research which nevertheless share a common set of assumptions. Whether a set of situated ongoing practices, a complex psychological and psychosocial process, an object-oriented productive process, the "activity" appears as an "entry point" for understanding space in all of its complexity – organizational, relational, experiential. Yet, different theoretical perspectives on activity involve different epistemological stances – comprehensive or developmental – which have a considerable impact on both conceptualization and intervention on/through space. One way forward in understanding workspaces as related to activities is to further develop and encourage the dialogue between activity-oriented approaches as this special issue proposes.

Maria Ianeva and Jean-Luc Tomás
*Center of Research on Work and Development,
Conservatoire National des Arts et Métiers, Paris, France*

Notes

1. Or rearranged offices that facilitate social distancing and protect employees from the risk of infection.

2. In particular, popular management literature promotes and disseminates the idea that (work) space is be recognized as a strategic resource for business which could be re-engineered into producing specific performance outcomes such as – "productivity in one space, say and increased innovation in another or both in the same space but at different times" (Waber, Magnolfi and Lindsay, 2014, p. 71).

3. There is a growing interest in the field of organizational studies in space as related to management and organizing (see for instance Taylor and Spicer, 2007; Mengis, Nicolini and Gorli, 2016).

4. Such as for instance the cultural-historical activity theory (Engeström, 1987/2015).

5. As mentioned by Boltanski and Chiapello (2007), the worker in contemporary organizations has become "light," having lost his bearings in a changing and uncertain environment. Hence, professionals are often isolated in the face of the dilemmas and contradictions of their work. The clinician's task is then to "provoke" conflict over work-related issues and over the criteria of what makes good work in order create opportunities for reflecting on work.

6. "To study something historically means to study it in motion. Precisely this is the basic requirement of the dialectical method. To encompass in research the process of development of a given thing's development in all its phases and changes – from birth to death – means to discover its nature, its essence, for it is only in movement that a body shows what it is." (Vygotsky, 1978, p. 65).

References

Appel-Meulenbroek, R. (2014), *How to Measure Added Value of CRE and Building Design. Knowledge Sharing in Research Buildings*, Technische Universiteit Eindhoven, Eindhoven.

Bobillier-Chaumon, M.E. (2013), "Conditions d'usage et facteurs d'acceptation des technologies: Questions et perspectives pour la psychologie du travail", Habilitation à Diriger des Recherches – HDR, Université Pierre Mendès-France.

Boltanski, L. and Chiapello, E. (2007), *The New Spirit of Capitalism*, Verso, New York, NY.

Boy, G.A. (2013), *Orchestrating Human-Centered Design*, Springer, London.

Burke, R.J. (1988), "Sources of managerial and professional stress in large organisations", in Cooper, C. L. and Payne, R. (Eds), *Causes, Coping and Consequences of Stress at Work*, John Wiley and Sons, Chicester, pp. 77-112.

Clot, Y. (1999), *La Fonction Psychologique du Travail*, PUF, Paris.

Clot, Y. (2008), *Travail et Pouvoir D'agir*, Presses Universitaires de France, Paris.

Clot, Y. (2009), "Clinic of activity: the dialogue as instrument", in Sannino, A., Daniels, H. and Gutiérrez, K.D. (Eds), *Learning and Expanding with Activity Theory*, Cambridge University Press, New York, NY, pp. 286-302.

Cole, M. (2005), "Foreword: Why a fifth dimension?", in Nilsson, M. and Nocon, H. (Eds), *School of Tomorrow: Teaching and Technology in Local and Global Communities*, Peter Lang, Bern, pp. 9-12.

Daniellou, F. (2005), "The French-speaking ergonomists' approach to work activity: cross-influences of field intervention and conceptual models", *Theoretical Issues in Ergonomics Science*, Vol. 6 No. 5, pp. 409-427, doi: 10.1080/14639220500078252.

Daniellou, F. and Rabardel, P. (2005), "Activity-oriented approaches to ergonomics: some traditions and communities", *Theoretical Issues in Ergonomics Science*, Vol. 6 No. 5, pp. 353-357, doi: 10.1080/14639220500078351..

Engeström, Y. (1987/2015), "Learning by expanding", *An Activity-Theorical Approach to Developmental Research*, Second Edition. Cambridge University Press, New York, NY.

Evans, G.W. and Cohen, S. (1987), "Environmental stress", in Stokols, D. and Altman, I. (Eds), *Handbook of Environmental Psychology*, Vol. 1, Wiley, New York, NY, pp. 571-610.

Hopwood, N. (2014), "Four essential dimensions of workplace learning", *Journal of Workplace Learning*, Vol. 26 NoS 6/7, pp. 349-363, doi: 10.1108/JWL-09-2013-0069.

Ianeva, M., Ciobanu, R. and Vacherand-Revel, J. (2017), "De l'aménagement des bureaux à la transformation des modes de travail: quelles répercussions collectives? ", *Psychologie du Travail et Des Organisations*, Vol. 23 No. 2, pp. 137-158, doi: 10.1016/j.pto.2017.03.002.

Leclercq-Vandelannoitte, A. and Isaac, H. (2016), "The new office: how coworking changes the work concept", *Journal of Business Strategy*, Vol. 37 No. 6, pp. 3-9, doi: 10.1108/JBS-10-2015-0105.

Kornberger, M. and Clegg, S.R. (2004), "Bringing space back in: organizing the generative building", *Organization Studies*, Vol. 25 No. 7, pp. 1095-1114, doi: 10.1177/0170840604046312.

Lave, J. (1988), *Cognition in Practice: mind Mathematics and Culture in Everyday Life*, Cambridge University Press, New York, NY.

Leplat, J. (2008), *Repères Pour L'analyse de L'activité en Ergonomie*, Presses Universitaires de France, Paris.

Mengis, J., Nicolini, D. and Gorli, M. (2016), "The video production of space: how different recording practices matter", *Organizational Research Methods*, Vol. 21 No. 2, pp. 1-28, doi: 10.1177/1094428116669819.

Orlikowski, W.J. (2007), "Sociomaterial practices: exploring technology at work", *Organization Studies*, Vol. 28 No. 9, pp. 1435-1448, doi: 10.1177/0170840607081138.

Paillard, J. (1991), "Motor and representational framing of space", in Paillard, J. (Ed.), *Brain and Space*, Oxford University Press, Oxford, pp. 163-182.

Rabardel, P. (1995), *Les Hommes et Les Technologies. Approche Cognitive Des Instruments Contemporains*, Armand Colin, Paris.

Spinuzzi, C., Bodrožić, Z., Scaratti, G. and Ivaldi, S. (2019), "'Coworking is about community': but what is 'community'in coworking?", *Journal of Business and Technical Communication*, Vol. 33 No. 2, pp. 112-140, doi: 10.1177/1050651918816357.

Taylor, S. and Spicer, A. (2007), "Time for space: a narrative review of research on organizational spaces", *International Journal of Management Reviews*, Vol. 9 No. 4, pp. 325-346, doi: 10.1111/j.1468-2370.2007.00214.x.

Vásquez, C. and Cooren, F. (2013), "Spacing practices: the communicative configuration on organizing through Space-Times", *Communication Theory*, Vol. 23 No. 1, pp. 25-47, doi: 10.1111/comt.12003.

Vischer, J. (2007), "The effects of the physical environment on job performance: towards a theoretical model", *Stress and Health*, Vol. 23 No. 3, pp. 175-184, doi: 10.1002/smi.1134.

de Vries, J.C., de Jonge, H. and van der Voordt, T.J.M. (2008), "Impact of real estate interventions on organisational performance", *Journal of Corporate Real Estate*, Vol. 10 No. 3, pp. 208-223, doi: 10.1108/14630010810922094.

Vygotsky, L. (1978), *Mind in Society. The Development of Higher Psychological Processes*, Harvard University Press, Cambridge.

Waber, B., Magnolfi, J. and Lindsay, G. (2014), "Workspaces that move people", *Harvard Business Review*, Vol. 92 No. 10, pp. 68-77, available at: https://hbr.org/2014/10/workspaces-that-move-people

Wisner, A. (1995), "Understanding problem building: ergonomic work analysis", *Ergonomics*, Vol. 38 No. 3, pp. 595-605, doi: 10.1080/00140139508925133.

Yaneva, A. and Guy, S. (2008), "Guest editorial. Understanding architecture, accounting society", *Science and Technology Studies*, Vol. 21 No. 1, pp. 3-7, available at: https://sciencetechnologystudies.journal.fi/article/view/55230/18065

Yanow, D. (2010), "Giving voice to space: academic practices and the material world", in Van Marrewijk, A. and Yanow, D. (Eds), *Organizational Spaces. Rematerializing the Workaday World*, Edward Elgar, Cheltenham, pp. 139-158.

Further reading

Lindahl, G.A. (2004), "The innovative workplace: an analytical model focusing on the relationship between spatial and organizational issues", *Facilities*, Vol. 22 Nos 9/10, pp. 253-258, doi: 10.1108/02632770410555977.

Vos, P. and Van der Voordt, T. (2002), "Tomorrow's offices through today's eyes: effects of innovation in the working environment", *Journal of Corporate Real Estate*, Vol. 4 No. 1, pp. 48-65, doi: 10.1108/14630010210811778.

9