
Guest editorial: To the special issue TWR 2020, no. 2 Future Workspaces II

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145

In the first issue of the TWR special issue (2022, 1), we looked at the general transformation of work, work organisation and new concepts that are changing the world of work in the long term related to digitisation and the use of new media. We argued that this change leads to a general desire to design (office) work environments in a way that better meets the heterogeneous preferences and needs of employees, which requires a holistic perspective on workplaces and workspaces as well as transdisciplinary approaches in research and consulting.

This is where the Transdisciplinary Workplace Research (TWR) network comes in. The network's approach is to bring together otherwise isolated, disciplinary considerations and to place workplace design and everything related to it in a transdisciplinary perspective, a perspective in which evidence-based research and practice are brought together as well as different approaches of various scientific disciplines. This is happening as network members organise events together and begin to implement TWR in research projects together with practitioners from the industry. A special role is played by the network's biennial conference, which in 2020 was held for the first time in a truly hybrid form, in Frankfurt, Germany and online, because of pandemic conditions. The theme of the conference was "Future Workplaces", which also provided the framework for the call for papers for this special issue following the 2020 TWR conference. In view of the large number of highly stimulating articles being submitted, the conference resulted in not only one, but even two Special Issues with practice-oriented scientists and science-oriented practitioners authoring nine, future-oriented papers. In this second volume of the Special Issue, we present five papers dealing with more questions and proposals on how to design work places and work environments that are stimulating and motivating, healthy and productive.

Pandemic enforced home working, which has risen to 30%–40% in some parts of the world, has given many people a better idea than before of organising work themselves, learning about their needs, organising working hours more flexibly or choosing the workplace (needs or task oriented). Suddenly it was possible to hold classes from the comfort of your own living room, to advise pregnant women as midwives via video link, to monitor and control production machines remotely or even for janitors to move documentation work to the kitchen table. Now that many companies want to bring their employees back to the office, it is becoming clear that the majority of employees do not want to give up their newfound freedom so easily. Although only a small percentage do not want to return to the office at all, for most it takes at least some persuasion. Nowadays, employees expect much more in terms of individual needs fulfilment in the office than they did before the pandemic, and it is up to employers to rethink and adapt the office experience accordingly. In addition, previously widespread office concepts such as the open-plan office are also coming under further pressure to change.

Thus, agreements are increasingly necessary that create a framework for this new flexibility. This will certainly have consequences for the design of office spaces. On the one hand, it becomes necessary to equip corporate offices with benefit, so that employees come



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there without being forced to do so. On the other hand, companies will need to think about completely new concepts; concepts that enable personnel to work with reduced transfers and associated lower consumption of resources, that is, close to home, but still in professional environments, for example, in co-working spaces or other third spaces. Overall, it will be necessary to give people more flexibility in choosing where they live and work, while at the same time creating opportunities for people to meet, even beyond their own corporate context, will be a step into the future of work. Another major challenge will be for the employees, as they need to deal with the different spatial references of their work and to manage the simultaneity of physical workplaces and virtual workspaces. This also poses challenges in terms of qualifications, culture and knowledge. For practice and research, summarised, this means a further increase in complexity that has to be managed collaboratively and by the implementation of new research and evidence.

In this second issue of the special issue, new design concepts and activity-based work environments discuss these challenges and propose solutions, with brief outlines of these articles below.

Lukas Windlinger and Eunji Häne from the Institute of Facility Management at the Zurich University of Applied Sciences conducted empirical research via an online survey in Switzerland and Belgium to find out more about the employees' switching behaviour in ABW activity-based working environments. The aim of their contribution "Switching behaviour in activity-based working environments: An exploration of the reasons and influencing factors" is to identify reasons (not) to switch and influencing factors of switching behaviour. As previous studies had reported that employees do not switch between different activity settings as frequently as intended, the goal of the authors was to understand employees' reasons for their behaviour better. For this, the study broadens the scope by including not only work-related switching behaviour but also switching with social purposes and taking breaks. As a result, the concept of "switching behaviour" is further specified and it is proposed to distinguish between "mandatory" and "voluntary" switching.

The findings show that most of the respondents in fact do switch multiple times a day. There is clear evidence that various suggested reasons and factors have significant effects on the voluntary switching frequency but no effect on the mandatory switching frequency. This indicates that separation of mandatory and voluntary switching is required. The research furthermore shows that mismatches between activity/preference and environment (i.e. privacy, acoustics, distraction) and mismatches between preference and social environment (i.e. proximity to team/colleagues) resulted as the main reasons to switch. As reasons *not* to switch, place preference/attachment, productivity at and comfort of the current place, as well as proximity to team were determined as mostly agreed upon. In addition, the desire to explore and privacy had stronger influence on frequently switching groups, whereas size and temperature of the current place had a stronger influence on the less frequently switching group. All in all this study broadens the understanding of employees switching behaviour.

Based on the assumption that interior office space can affect health in several ways, strategic and evidence-based design, including explicit design objectives, well-chosen design solutions and evaluation of results, Susanne Colenberg and Jylhä Tuuli, Department of Human-Centered Design at the Delft University of Technology, worked on their paper "Identifying interior design strategies for healthy workplaces – a literature review". In their review of 59 peer-reviewed papers published across disciplines, they identify possibly effective interior design strategies and accompanying design solutions and provide examples of effectiveness measures. As a result, they present four main workplace design strategies, from pathogenic to salutogenic approaches, aiming at office workers' comfort,

restoration and social well-being and stimulating healthy behaviour. Moreover, outcome measures that were applied in the research papers serve as examples of how to estimate the effectiveness of a design strategy in achieving health improvement or consolidation.

The most dominant strategy in the considered time-span focuses on reducing environmental demands and decreasing harm and health risk, which refers to a pathogenic approach. The other three take a salutogenic approach, aiming for renewal and increase of resources for coping with demands in the workplace. They relate to positive design that is explicitly intended to support human flourishing by, for instance, generating pleasure, personal significance and virtue, thus supporting people's resilience. The presented examples of evidence-based design solutions and effectiveness measures could aid making design decisions explicit and testing assumptions. The paper thus encourages workplace designers, managers and researchers to take a transdisciplinary and evidence-based approach of healthy workplaces. It also points to future measures under the salutogenic approach, which have recently seen increased development because of corona.

Helja Franssila, Senate Properties, Helsinki, and Aleksi Kirjonen, Ministry of Justice, Helsinki, studied the "Impact of activity-based work environments on knowledge work performance – quasi-experimental study in governmental workplaces". They pursued a quasi-experimental design in three governmental organisations that enabled a real-time coverage of change processes towards ABW, with treatment and control groups to distinguish the impact of ABW on several dimensions of knowledge work performance. The difference-in-differences approach made it possible to isolate the causal impact of ABW change on the knowledge-work performance drivers and outputs from other simultaneous changes taking place in the studied workplaces. The study looked at perceptions of physical environment, virtual environment and social environment, individual ways of working, well-being at work and self-assessed productivity.

The results show that the change processes do not impact productivity or well-being at work. This is also true for a range of other factors that remained stable. The research also brought up a positive impact on group work effectiveness but negative effects on perceptions of the facilities as conducive for efficient working. ABW change had an enhancing effect on the routine of protecting one's concentration from software-induced interruptions and decreasing effect on using mobile technologies to work during idle times and using technology to avoid unnecessary travelling. ABW change made telework more acceptable. In general, the results show that ABW change is a valid means to secure a diverse and functional physical work environment for modern knowledge work. The results also show that well-being at work or productivity will not collapse because of ABW change.

The project of Piia Markkanen, Eevi Iuuti and Aulikki Herneoja, Oulu School of Architecture at the University of Oulu, Finland, studies how the work environment can support collaborative knowledge sharing and problem-solving, here in the context of a growing start-up company with 4–10 employees during the time of research. Their paper "Exploring ways to study the workplace design in a small knowledge work company" focuses on two questions: how user-generated data can inform workplace design and how the design outcomes can be tested in a work environment. Accordingly, the study consists of a participatory design process in three phases and an intervention study in which evaluation data was collected with qualitative methods.

Results of the participatory design, which analysed participants' daily habits, individual and collaborative tasks, and client communication were that task-related needs differed in terms of privacy, interaction, exposure and atmosphere. Previous research was confirmed which showed that a perceived fit towards the environment occurs through the combination of activity, task complexity and personal need for privacy. Understanding user needs in a

contextual manner is important for the design process, as workplace-specific user needs depend on employees' job descriptions. Key points to obtain design data were design aims, affordance design and site-specific multi-dimensional design. The intervention study revealed that lack of activity-supporting spaces created undesirable overlaps for focused work, collaborative work and client communication. Summarised, this study makes the workplace design phases more visible and supports finding new ways to study the connection between the user needs and workplaces.

The fifth article in the special issue comes from the same Finnish group of researchers at the University of Oulu, Aulikki Herneoja, Piia Markkanen and Eevi Juuti. The aim of their conceptual contribution "An architectural viewpoint to user-centred work environment research to support spatial understanding in a transdisciplinary context through ecosystem-based approach" is a better understanding of spatial receptions. They try to shed light on earlier contradictory findings suggesting a new perspective. The theoretical framework is built on the presumption that defining spatial solutions of activity-based office environments through user-centred interdisciplinary dialogue would strengthen the understanding of interdependencies between the environment and office workers. This presumption also contributes to the idea that the shared and clarified concepts of spatial solutions by location-specific structuring would support the research outcomes. They can be communicated to design practice and further to improve work environment design in the future. Last but not least, their supposition is that understanding, documenting and communicating the interdependencies between the environment and the employees would contribute to increased interdisciplinary understanding, ultimately benefitting the end user, the office worker.

The outcome of these considerations is a twofold model of an activity-based office ecosystem-based approach, in which the physical environment is structured into two entities: architectural envelope and interior orchestration. Finally yet importantly, the model should engage participants and evidence providers in the design or research processes to develop a better work environment.

We hope you enjoy reading and discover exciting insights. Yours

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