Urban Facility Management for Healthy Cities

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ABSTRACT

Purpose: Worldwide, sedentary behaviours and overweight are major health concerns. Most adolescents are insufficiently physically active and have overweight. Moreover, most work is sedentary or requires only light activity. And most people live in cities, a context which discourages participation in physical activity. How can we change this situation? An analogy between urban design and facility design is introduced to elucidate spatial properties that may be beneficial in both contexts. It is the purpose of this paper to use this analogy for the advancements of health and well-being of both workers and city dwellers.

Methodology: The principles of abductive reasoning were followed. Abduction as a first phase of scientific investigation, in this case a process of introducing a new idea and attentive observation of phenomena in the communities of facility management, public health, and urban design. The method was desk research, which was done in the context of discovery.

Key findings: A built environment can support physical activity or deter sedentary behaviours in cities and workplaces. In cities the workforce can be seduced to move to attractive facilities at short distances. Safe and clean facilities for walking and cycling positively stimulate user activities. Moreover, the design of attractive environmental cues can raise user curiosity and stimulate user interaction. Facilities and cities that support active breaks at organizations and provide individual or group counselling as well as Internet-based tools and feedback loops for workers and inhabitants can promote healthier behaviours. Challenges, competitions and the monitoring of physical activity using log books have similar effects. In buildings, spaces can be much healthier by creating prompts for user behaviour, such as visually attractive stairwells, healthy food supply, and ergonomic furniture. Access to fresh air, daylight, plants, silence, and the right temperature can also make an important contribution to the health of people in organizations. These interventions allow cities and organizations to positively influence the health of both employees and residents.

Intended impact of the study on either research, education or practice: The reported spatial properties that support physical activity or deter sedentary behaviours can be directly applied to facility and urban design practices. Mutual relations between facilities and cities are new and can inspire both facility managers and urban planners to work together more closely for the benefit of end users in urban and workplace contexts. The findings can also be directly applied to facility management education by involving students via excursions, internships, and studies at city design practices.

Paper type: Conceptual Paper.

Keywords: Abduction, Facility Management, City, Health, Urban Planning, Workplace.

1 INTRODUCTION

Worldwide, sedentary behaviours and overweight are major health concerns. Globally, 39% of adults aged 18 years and over were overweight and 13% were obese (WHO, 2018a). More than 80% of the world's adolescent population is insufficiently physically active which is one of the leading risk factors for death worldwide (WHO, 2018b). Work and the city may be dominant factors in these developments.

Firstly, in developed countries most of the work is non-physical. For instance, of all U.S. jobs 80 percent is sedentary or requires only light activity (Church et al., 2011). Among this group, office workers are one of the most sedentary populations, spending 70-85% of time at work sitting (Edwardson et al., 2018). So, the workplace is a tough place for the ones that want to be active. Secondly, globally more people live in urban areas than in rural areas, with 55% of the world's population residing in urban areas in 2018 and expected to increase to 68% by 2050 (UN, 2018). Urban areas are often unhealthy places to live, characterized by heavy traffic, pollution, noise, violence, and potential social isolation (WHO, 2010a). WHO (2018c) reports that increased urbanization has several environmental factors which discourage participation in physical activity such as violence, high-density traffic, low air quality, pollution, lack of parks, sidewalks, and sports/recreation facilities. Hence, the city is non-inviting place for the active, and even worse, it creates barriers for the ones that want to become active.

As a response to these developments many initiatives, separate but related, have sought to change these situations. For instance, a healthy workplace is a place in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and wellbeing of all workers (WHO, 2010b). In this context, an interesting example is the use of 'nudging' (Thaler & Sunstein, 2008) to stimulate active behaviours. Indirect hints can blend in design, such as a beautiful staircase at the entrance (and hiding the elevator) stimulating stair use (Engbers et al., 2007). As to now, the WHO has devoted almost a decade to the advancement of such workplaces. In a similar but also a much wider context, a healthy city is one that continually, for instance, creates and improves its physical and social environments (WHO, 2019a). The WHO healthy cities movement has been a pioneering driver of change for more than three decades, arguing to have created healthier urban settings that support the health and well-being of the people that use them (2019b). Urban planning being one of these drivers (WHO, 2017).

Most people work at desks and live in cities; two contexts which discourage participation in physical activity. How can we change this situation? An analogy between urban design and facility design is introduced to elucidate spatial properties that may be beneficial in both contexts. It is the purpose of this paper to use this analogy for the advancements of health and well-being of workers and city dwellers. Are health-directed design interventions in cities and facilities related, are there applicable cross-overs and emerging new research areas of interest for FM?

2 METHODS

In this paper the principles of abductive reasoning were followed. Folger and Stein (2017) argue that abductive reasoning should not be considered as stages of a process, but rather, it can blur together in ways other than what might be conveyed initially. Abduction can be a good first phase of scientific investigation. It merely suggests that something may be (Peirce, 1934). In this sense, abduction can be understood as a broad kind of reasoning that integrates scientific as well as non-scientific thinking in the context of problem solving (Rodrigues & Emmeche, 2019). They also argue that this method consists in attentive observation of phenomena within

the context of a scientific community. According to Cunningham (1998), abduction is the appropriate method for making sense of new (or unknown) situations. However, there must be a reason to suspect that the conclusion of an argument is worthy of pursuit (Folger & Stein, 2017). Moreover, abduction seems to be in need of scientific experience. Having an attentive eye to capture the new aspects of a surprising phenomenon is essential to the production of such new knowledge (Rodrigues & Emmeche, 2019). Abduction is the process of inferring facts and/or laws that render some sentence plausible, that explain some phenomenon or observation (Boutilier & Becher, 1995). Many intelligent tasks, including medical diagnosis, scientific discovery, and legal reasoning, have been characterized as abduction (Lin & You, 2002). According to Peirce (1934) abduction is the only logical operation which introduces any new idea. What is most significant about abductive conjectures is that they are conceptualizations that can frame future investigations (Shearer, 2015). Moreover, an abduction-based design framework provides a proactive tool for connecting basic research to applied research, exploring and exploiting, in a new and innovative way (Patokorpi & Ahvenainen, 2009).

In this present study, it is believed that the relationship between spatial design directed at user health in two different contexts provides a good reason for a quest. Motivation of the attentive observation can be found in the development at communities of facility management, public health, and urban design. Many studies focus on the interactions between the environment and health. Analogies between facility design and urban design were used to elucidate unknown characteristics of this matter (Crombie, 1994). It is the purpose of this paper to use this analogy for the advancements of health and well-being of workers and city dwellers. Related studies at workplaces and cities on the subject may allow for interesting cross-overs and learning opportunities. New research opportunities may also emerge when searching to practically promote user health in both contexts. Moreover, finding new starting points for conceptualisation of these cross-overs may be a desirable scientific outcome; and applicability of the findings in both design practices may have significant societal relevance. Societies may become healthier and more productive. But, be also reminded that this paper aims to explore and conceptualize in the context of discovery with abductive reasoning rather than aiming to be exhaustive as in a systematic literature review.

3 URBAN DESIGN

Worldwide, in cities countless people live and work. The wonderful property of a city is that work and entertainment are so close together. That provides organizations with many cues to stimulate healthy behavior (for example, with discount coupons for restaurants that focus on healthy food or for fitness subscriptions), but also to stimulate healthy exercise in other ways. Why not create the infrastructure to allow workers to bike to work? A nice city walk can be a welcome distraction from the work, which can also be combined with two- and three-person meetings, where reflection and knowledge exchange are central. The city is not very different from a business park: if you consider the city as an area where employees can be active, you have to admit that it can be fantastic for a walk. But also, where it is terrible or even dangerous to walk, due to traffic. Following the WHO (2018c) physical activity can especially be encouraged by taking care of environmental factors in a wider context. Reduction of violence, high-density traffic, better air quality, less pollution, and sufficient parks, sidewalks and sports/recreation facilities. Factors that ask for a high level of engagement of authorities. The Dutch situation is used to exemplify the possible commitment of authorities with urban design.

The Dutch Health Council (Gezondheidsraad, 2010) advises local authorities and urban designers to take measures in the city that stimulate the use of bicycles and reduce the use of cars. Consider, for example, designing a neighborhood infrastructure that can stimulate physical activity (socially safe and traffic-safe walking and cycling paths to destinations like work, school, shopping, sports) and mitigating car use (speed limits, car-free zones, low-traffic zones).

At city level, walking and cycling can also be stimulated, through a dense network of bicycle and pedestrian paths. Moreover, clever urban hubs could be designed in connecting public transport with hiking and biking. Think of an infrastructure for bicycle parking for work, education, healthcare, and leisure. In addition, the Health Council advises authorities to slow down the speed of car traffic with speed bumps for residential areas, road pricing, and paid parking.

Following the WHO-report (2018c) physical activity can also be stimulated with the design and construction of public gardens, parks, bathing water, and hiking opportunities that are easily accessible, socially safe, and clean. Preferably in combination with spot-on and sophisticated attractions, such as combinations of food, infotainment, and fun. In order to keep the growing population of (spoiled) users on board.

In this context, good urban planners create an exercise-friendly layout of the city. They always listen carefully to the needs and wishes of the users, and make it fun and pleasant to exercise. Stop talking about health: design. Create designs that expand the number of active people in the city. Designers are capable of packing, blurring physical activities with work, sports, dance, and party. Make active behaviors fun, easy and popular, according to Dutch authorities (Rijksoverheid, 2013).

These examples open up possibilities for urban designers and policy makers to design different cities. Cities that are designed for user activation. But how can this be done in and around buildings for organizations?

4 FACILITY DESIGN

Researchers did find it difficult to seduce office workers to use the stairs or to purchase healthy food. That is particularly unfortunate, because it would have supported global ambitions in creating a healthier workforce. For example, in the first FoodSteps project, Engbers et al. (2007) found that spatial interventions (such as footsteps from entrance to stairs, text encouragement for stair use on elevator doors, stimulating texts and facts at the stairs, and slimming mirrors at the stairs) tempted the workers to go climbing stairs. In the experimental group, workers took the stairs three times a week more often than in the control group. The study also provided information about the provision of healthy food in canteen and at vending machines. With these mixed interventions, according to the researchers, the cholesterol of office workers decreased (Engbers et al., 2007).

In the follow-up FoodSteps project (Engbers et al., 2014), however, the conclusions were less convincing. The researchers, just as in the first project, placed information posters at stairs and canteen and footsteps towards the stairs. This included organized lunch walks, a scale in the elevator, a game computer with active games, and a pedometer competition. This study showed show no effect of the interventions on stair use, elevator use, the sales of lettuce, and oven and/or fried snacks. Support from senior management and sufficient budget and time for the project leader, as well as the prevention of slacking of the project focus, were deemed vital. In this case apparently lacking.

Another study (Eves & Webb, 2006) advises us to position facilities in the vicinity or at the end of a staircase in a building. Preferably, of course, facilities that are often used (such as a canteen, a meeting room, or a toilet). The researchers also advise us to integrate stairs (or stairwells) with walking routes in the building, for instance, by explicitly including stairwells in the signposting of the building. In this context, Engbers (2008) advises us to focus on staircase use, reducing low-exercise workplaces or work tasks when introducing new workplace concepts. Moreover, expanding facilities for physical activity (such as bicycle parking, showers, fitness, or table tennis) and centralizing facilities (such as the printer, meeting rooms, and social relaxation rooms), so that physical activity is stimulated in the building.

At the moment there are also many experiments at organizations that seek to create a healthy workplace. It is an urgent matter. Duncan, Kazi, & Haslam (2012) have reported that in the UK people spend on average 5 hours and 41 minutes per day sitting at their desk and 7 hours sleeping at night in a typical working week. This is bad for the physical health of workers. Prolonged sedentary behaviour is associated with increased mortality, cardiovascular disease, type 2 diabetes, colorectal cancer, and poor mental health outcomes (Gray, 2018). In practice, advise is given with standing meetings, bicycle seats, and treadmills, to get employees exercising during work. Furthermore, research must also remain devoted to other spatial properties at work. Examples of the properties that remain to need are attention are air quality (airflow, particulate matter, CO_2), temperature (comfort, suitability for the task), noise (nuisance, privacy, intelligibility), and light (access to natural light, visibility in task performance, reflection on screens) (Becker & Steele, 1995). This may seem very obvious, but it is poorly designed in many places.

Loitz et al. (2015) advised to support active breaks at organizations and provide individual or group counselling as well as Internet-based tools and feedback loops for workers and inhabitants can promote healthier behaviours. Challenges, competitions and the monitoring of physical activity using log books have similar effects. A systematic meta-review (Jirathananuwat & Pongpirul, 2017) has confirmed that design interventions such as promoting stairway signs, indoor and outdoor walking routes, and walking groups were effective in promoting physical activity in the workplace. But even though the opposite is often claimed, we still know too little about the effectiveness of workplace interventions. We are only at the beginning and there is still much to learn. Gray (2018) confirms this observation by arguing that even though lifestyle interventions reduce time spent sitting, many studies are low quality and show only modest improvements in sedentary behaviour. So, we need to do better: to develop better studies, to seek better alignments with practice, develop a clear focus on application, and provide independent and reliable evidence on effective interventions. When cleverly interwoven and embedded in a work and city context, these interventions allow organizations and cities to positively influence the health of both employees and residents.

5 DISCUSSION

Given the alarming numbers of overweight and obese, it is surprising to see so little substantial change. Spaces and services can provide support. In adolescents to become sufficiently physically active, the mind may be willing, but the flesh is often weak. After all, all of us can have lunch while walking, go climbing stairs, and avoid unhealthy snacks, but do we do it? Organizations and governments can use the built environment for nudging. Seducing people in the right direction and sometimes adjusting them actively. Subsidizing and stimulating healthy food with higher pricing of unhealthy snacks? Having meetings during a walk outside (even though a different urban layout may be required)? How about something simple as an outdoor area? Walking pleasantly throughout the year, no matter the weather? A built environment that

protects you from weather, but also brings in fresh air and wonderful daylight. Unfortunately, many cities lack this kind of protection against cold, wind, rain and sun. Keeping people inside when the weather is harsh. Designers of spaces and services can bring change.

Healthy exercise in cities and buildings may sometimes be difficult, but it is feasible. Paths can be designed and constructed. Trees can be planted and water can be cleaned. Car traffic can be mitigated. Safe zones and spaces can be given to the active. The success of this will not depend on cooperation. Administrators of cities and organizations will have to work together, to stimulate physical activity in and around buildings, both in the public and in the private domain. A lot is already happening, but more drastic measures are needed. Starting with designs for children may be a relevant game changer.

Moreover, we need new research that unlocks experiences and capacities of the FM industry and applies this in a city context, vice versa. Let us try and link changes in the built environment with public health studies in and combine these with the health of the workforce. Focusing on the affordances of facilities and cities. Here the experiences of facility managers and urban planners can be expected to create synergy. The dreams of designers meeting the realism of the FM-experts of human behavior and needs. FM also needs new research into nudging, direct people with the built environment. To seduce them in becoming more active and live healthier. To normalize smoking free zones and strive for smoking free generations. To jointly work on a research and health agenda - facility managers and urban planners - their cooperation can be a game changer in creating healthy cities and workplaces for people.

6 CONCLUSION

The built environment of cities and workplaces can support physical activity or deter sedentary behaviours. In the public domain the workforce can be seduced to move to attractive facilities at short distances. Safe and clean cities providing space for walking and cycling further positive user experiences. Moreover, the design of attractive environmental cues can raise user curiosity and stimulate approach behaviours. Facilities and cities that support active breaks and provide individual or group counselling as well as Internet-based tools and feedback loops for workers and inhabitants can promote healthier behaviours. Challenges, competitions and the monitoring of physical activity using log books may have similar effects. In buildings, spaces can be much healthier by creating prompts for user behaviour, such as visually attractive stairwells, healthy food supply, and ergonomic furniture. Access to fresh air, daylight, plants, silence, and the right temperature can also make an important contribution to the health of people in organizations. These interventions allow cities and facilities to positively influence the health of both employees and residents.

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