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Supporting, tinkering, adjusting and resisting: a typology of user translations of the built environment

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Abstract

Purpose – Architectural theorists have a long tradition of acknowledging the centrality of building users to architectural production. This article contributes to the discourse on architecture, actor–network theory (ANT), and users by proposing a typology of user translations ranging from supporting to tinkering to adjusting to resisting.

Design/methodology/approach – The research utilises an ANT-inspired ethnography of sustainable lighting scripts at the Masdar Institute of Science and Technology (MIST). It comprises semi-structured interviews with MIST designers and students, and site visits and participant observation to understand how the users interpret the scripts and how they interact and change them on a daily basis.

Findings – There is a shared understanding that users do not simply receive architectural designs but interpret and change them to suit their preferences. The findings reveal the multiple ways that users interpret and respond to the assumptions of designers and in the process, recast the relations between themselves and their material surroundings.

Originality/value – The research contributes to acknowledging the centrality of users to architectural design processes and the interpretation of design scripts, addressing the limitation in current literature in demonstrating the diversity of ways that users react to such scripts. The research suggests that user actions have significant implications on long-term building performance. It accordingly points to the need for devising multiple means of user involvement in the design process and allowing greater flexibility in design scripts to improve the alignment with user preferences.

Keywords Actor–network theory, Co-design, User behaviour, Built environment, Design script, User translation

Paper type Research paper

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1. Introduction

Building designers configure the built environment to achieve the intentions and expectations of their clients (Cuff, 1992; Houdart and Minato, 2009; Loukissas, 2012; Schön, 1983, 1987; Yaneva, 2009a, b). Meanwhile, users are rarely consulted in design processes and thus, react in unanticipated ways to design configurations that do not conform to their lifestyles. This creates a persistent gap between design visions and lived realities of buildings. A growing body of research has focused on the actions of users in interpreting and reconfiguring the built environment to fit their lifestyles (de Certeau, 1984; Hill, 2001, 2003). A particular strand of this research draws on actor–network theory (ANT) to develop a relational perspective between users, technologies and built form (Fallan, 2008a, b; Gieryn, 2002; Grandclément *et al.*, 2015; Guggenheim, 2009; Kärrholm, 2012; Yaneva, 2003, 2009a, b, 2017; Yiannoudes, 2015). Here, there is a focus on how buildings co-evolve over time, from conception to design to construction to occupation. While this work acknowledges users as central to architectural design processes, it often fails to recognise the diversity of ways that users intentionally alter these relations (Jelsma and Rohracher, 2003; Oudshoorn *et al.*, 2005; van Oost *et al.*, 2009).

This article presents a typology of the various ways that users interpret and modify architectural designs to align with their expectations and desires. The findings are based on an ANT-inspired ethnography of the Masdar Institute of Science and Technology (MIST) in Abu Dhabi with a specific focus on three sustainable lighting strategies: daylighting, motion sensing and system control. The findings reveal significant gaps between designer intentions and user experiences and demonstrate how users engage in different modes of co-design by supporting, tinkering, adjusting and resisting the designers' intentions. These actions have long-term implications on building performance and point towards the need for more flexible designs to accommodate user lifestyles and preferences.

The article begins with a summary of ANT and how it has been applied to architectural design processes and then describes the ethnographic approach used to study sustainable lighting strategies at MIST and the experiences and actions of users. This is followed by empirical descriptions of how the designers scripted the three lighting strategies and how the users then interpreted and translated these scripts. The article concludes with reflections on how such user interventions are relevant to broader processes of architectural design and building habitation.

2. Literature review

Design theorists have recognised the significance of users through the active and creative roles they play in design processes (Cupers, 2013; Hill, 2001, 2003) and the implications of their participation in these processes (Blundell-Jones *et al.*, 2005; Jenkins and Forsyth, 2010; Katan and Shiffman, 2014; van der Linden *et al.*, 2018). A specific strand of this research involves the application of ANT to understand the relation between design intentions and users experiences (Fallan, 2008a, b; Gieryn, 2002; Grandclément *et al.*, 2015; Ornetzeder and Rohracher, 2006; Rohracher, 2003, 2005). The work interprets the built environment as a relational achievement that brings together human and non-human actors (Guy and Karvonen, 2011; Kärrholm, 2012; Moore and Karvonen, 2008; Yaneva, 2009a, b, 2017). Of particular importance is the notion of the "script", initially introduced by Madeline Akrich (1992) and used in the context of architectural production to describe how designers inscribe specific assumptions about users into built form (Lecluijze *et al.*, 2015; Oudshoorn and Pinch, 2003, 2008; Timmermans and Berg, 1997). Here, it is understood that users are often passive actors in design processes and take an increasingly active role after the building is inhabited. Users interpret, modify and reject the proposed inscriptions of designers to fit

their needs (Akrich, 1992). Likewise, architectural researchers use the ANT notion of "translations" to suggest ways that users interpret and modify the scripts of designers (Abi-Ghanem, 2008; Fallan, 2008a, b; Rohracher, 2003, 2005; Yaneva, 2009b, 2017). Scripts and translations can be understood as processes of "heterogeneous engineering" (Law, 1987) that bring together users, technologies and the built form in particular configurations to co-design the built environment (Grint and Woolgar, 1997). Between designers and users, architecture is manipulated in different ways through lengthy negotiations and arrangements as well as intentional production and re-production (Kärrholm, 2012; Yaneva, 2009a, b, 2017). In other words, this perspective shifts the focus of architectural production from design activities to use practices and frames buildings as co-evolving entities.

Previous ANT research on building users (Brodersen *et al.*, 2015; Fallan, 2008a, b; Gieryn, 2002; Madsen, 2019; Sharif, 2016; van der Schoor *et al.*, 2014; Yiannoudes, 2015) has focused on prioritising the influence of users in building transformation (Yaneva, 2009b), revealing their roles in co-producing the design (Fallan, 2008b; Gieryn, 2002; Ornetzeder and Rohracher, 2006; Rohracher, 2003) and recognising their diversity (Abi-Ghanem, 2008, 2011; Hanmer *et al.*, 2017; Harrison and Kjellberg, 2016; Houlberg Rung, 2013). These studies provide new perspectives on how users engage with the designer's scripts by supporting them and changing their lifestyles to conform to the original intentions of the designer (Ornetzeder and Rohracher, 2006; Rohracher and Ornetzeder, 2012; Rohracher, 2005), tinkering with them through small modifications that do not significantly alter the design (Gieryn, 2002; Madsen, 2019), adjusting them by introducing significant changes to the design to conform to the users' expectations and desires (Fallan, 2008b; Yiannoudes, 2015), and resisting them through deliberate and explicit rejection (Fantaw, 2009; Rohracher, 2003, 2005). This research proposes a typology of users by comparing and contrasting these four modes of translation–supporting, tinkering, adjusting and resisting–in a single project. As such, this represents a spectrum of user translations that range from complete compliance with the designer scripts to complete non-compliance and illustrates multiple ways that users contribute to the co-design of the built environment. Furthermore, translations occur through iterative and recursive actions, suggesting that the tensions between design and use are in a diverse and continuous state of scripting and translation.

3. Material and methods

To provide detailed insights on these four modes of user translation, this research followed an ANT-inspired ethnographic approach to examine the lighting scripts at MIST. MIST is one of the early developments within the world-renowned Masdar City project in the United Arab Emirates. Masdar City is the first sustainable city in the Middle East and was designed by Foster + Partners in the UK (Khalifa-University, 2018). ANT-inspired ethnography diverges from traditional ethnography by calling for an in-depth investigation of the socio-technical dynamics of humans and the built environment (Sharif, 2019; Yaneva, 2003). This approach enriches ethnographic studies of design (scripts) and use (Kärrholm, 2012; Yaneva, 2009b, 2017) by encouraging researchers to trace relations and describe translations wherever they may lead. This is useful for understanding how users interpret the scripts of designers.

The lighting design scripts developed and deployed by the MIST designers are important to achieving the aggressive environmental goals of the project as a whole and are featured as innovative components of the architectural design (Cugurullo, 2013; Joss, 2011; Reiche, 2010). Technology plays a central role in all of the lighting scripts. The researchers focused on three lighting scripts (daylighting, motion sensors and system control) in the residential units over two phases of MIST campus development. Each script prompted a

wide array of user translations and illustrates the iterative co-design of the project during its early development phases. The lighting scripts and translations were analysed to follow the actions of users (Callon, 1986).

Data were gathered through a desk-based study of documents and websites, semi-structured interviews (30–60 min each) with 12 MIST designers and 23 students who lived at MIST, and site visits and participant observation (120–180 min each). Data were generated through audio recordings, photographs and sketches. Design participants included individuals who were part of the project team and who were on site to oversee the implementation of the design. User participants included students living in both phases of the project (13 from phase 1 and 10 from phase 2) with roughly even gender representation (12 females and 11 males), family composition (16 single and 7 with families) and varying durations of occupancy (2–4 years). The interviews and observations allowed the researchers to compare and contrast the design intentions and user activities. The researchers asked open-ended questions that allowed the participants to freely express how and why they interpreted the design scripts in specific ways. The interview schedule included questions about a wide range of issues and focused specifically on user interactions with windows, light switches, sensors and card systems. The researchers conducted observations of the users to develop further insights into how they incorporated the scripts into their daily activities. This entailed documenting how the users interpreted the scripts verbally as well as how they interacted and changed them on a daily basis (Yaneva, 2017). All participants were referred to in the text by pseudonyms to provide anonymity. The collected data were analysed thematically with the aid of qualitative data analysis software (NVivo 10) and coded to extract themes relevant to the co-design of lighting strategies. Diagrams were produced to illustrate the strong and weak connections between the users, technologies and the built environment.

4. Results

The main lighting scripts developed and applied by the designers at MIST included daylighting, motion sensing and system control. Each of these scripts included specific assumptions about how users would inhabit the buildings. The findings in the following sections provide brief summaries of how the designers developed and deployed each script followed by a more extended discussion on the user translations and how these influenced the relations between the humans and non-humans in the buildings.

4.1 Script 1: daylighting

All lighting scripts at MIST were geared towards reducing energy consumption while meeting occupant needs. A primary design strategy with respect to light is to maximise natural daylight through multiple design interventions while optimising visual and thermal comfort and ensuring privacy (Philips, 2004; Tregenza and Wilson, 2011). The designers based their daylighting script on findings from physical and computational studies and analyses to maximise daylight while minimising the need for artificial lighting sources.

According to designer Ralf, the designers used orientation and shading strategies to mitigate undesirable light conditions including direct light and heat gain. The units were designed with windows and slots to take advantage of daylight from passages, courtyards and internal atria. Meanwhile, light emitting diode (LED) ceiling lights in the second phase were equipped with dimmers to adjust the lighting to predefined levels and portable task lights were provided on a limited basis for specific indoor activities (reading, socialising, etc.). Figure 1 summarises the daylighting script as developed and implemented by the designers. This included a combination of built environment features (windows, slots) as

well as technologies (dimmers, portable lights) to optimise the lighting conditions for the users.

The users identified multiple conflicts between the initial daylighting script and their living expectations. Tiana and Sophie concluded that illumination in their units was insufficient. Depending on the unit location, vertical position and orientation, they received varying amounts of light, which was inadequate in some cases and forced them to use more artificial lighting than anticipated by the designers. Sophie further explained that she only received a reflection of daylight and this was insufficient for her to conduct her daily living activities. Eman noted that she lived on the lowest floor and the daylight was reflected many times before it reached her unit, resulting in consistently dim conditions.

Users such as Tiana supported the daylighting script by simply adapting their lifestyles to accommodate the dim conditions. Meanwhile, other users actively translated the script in different ways. A common undesirable condition involved glare, where Hamdi tinkered with the daylighting script by leaving his living room window blinds closed most of the time to avoid the glare from the opposite façade (Plate 1). Yan blocked the slots with cardboard because the sensor-operated lights in the atria triggered on a regular basis and disturbed him. Ahmad went even further by closing off all the openings while Sophie completely resisted the design by restricting her reading activities to rooms that did not have undesirable glare.

In addition to glare, the users responded to issues pertaining to thermal comfort where Yan, for example, tinkered with the script by partially closing the window blinds. The windows were shaded to block undesirable solar gain but because his unit was on the top

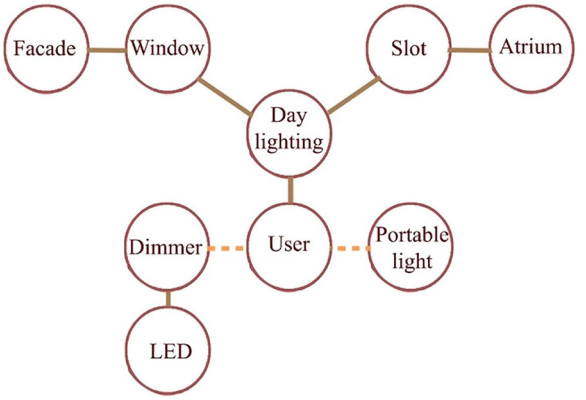

Figure 1.
Illustration of the daylighting script, with strong relations (solid lines) and weak relations (dashed lines)

Plate 1.
Windows covered with blinds (left) and slots blocked with cardboard (right)

floor, it continued to receive direct sunlight. Edward took more extreme actions and shut his window blinds to avoid undesirable solar gain. Eman resisted the script by avoiding the overheated rooms in her unit.

Privacy was another motivation for user translations. The daylighting script called for covering the windows with a shell (or barrier) to maintain privacy, and slots overlooking the atria were positioned high and made of frosted glass to block views. However, users often covered the openings partially or completely with blinds, cardboard or paper to prevent other occupants and visitors (as well as security cameras) from having a clear view into their units. In extreme cases, they avoided using the exposed rooms altogether.

Overall, the users reconfigured the daylighting script to optimise their comfort, convenience and satisfaction. The script was translated by users through their lived experience that was at times "thermally and visually uncomfortable" and "exposing". This resulted in the use of additional artificial sources that were in direct conflict with the design goal of reducing energy consumption. Eman supported the design script by simply coping with the deficient lighting conditions. Tiana tinkered with the script by switching on the kitchen light to supplement the light in the adjacent dining area. Hamdi placed a portable light on a large suitcase to mimic a ceiling light while Maram introduced multiple portable light sources throughout her unit. Maya went further by overriding the dimmer in the ceiling lights (installed in the second phase) and setting the lights at their maximum output. All of these activities were compounded by the aforementioned activities of blocking windows and slots.

The daylighting script illustrates how users identify conflicts with their living expectations (Brodersen *et al.*, 2015; Fallan, 2008a, b; Fantaw, 2009; Rohracher, 2005, 2006) and then translate the script to optimise their comfort (Abi-Ghanem, 2008; Fallan, 2008a, b; Hanmer *et al.*, 2017; Harrison and Kjellberg, 2016). In all cases, the translations were continuous and recursive, a course that defined and redefined actors and distributed their roles differently (Callon, 1986; Law, 1987). Compared to the daylighting script (Figure 1), the user translations (Figure 2) created new relations while also altering existing relations by severing them or making them weaker or stronger.

4.2 Script 2: motion sensing

In addition to daylighting, the designers provided motion sensors to manage artificial lighting and reduce energy consumption. Developer Mike noted that, in the first phase, all applicable lights were equipped with sensors while in the second phase fewer lights had sensors (such as in the kitchen and bathroom) to provide users with more control. Developer Sameeh described two types of motion sensors: those that switched on and off automatically depending on occupant movement and those with a manual override switch for direct user control. Both types of sensors allowed the unit to enter a sleep mode when motion was not detected. In this way, the designers delegated agency to the sensor to manage artificial light, thereby tightly scripting the lighting conditions (Figure 3).

The users regarded the motion-sensing script as limited, insufficient and unresponsive in multiple ways while showering, cooking and watching TV. As Tiana and Hamdi prepared their food, the kitchen light frequently turned off even though they were still in the room. They had to activate the sensor by waving their hands periodically and this disrupted their cooking activities. Mahmoud, Hamdi, Yan, Abdullah and Wasim told similar stories of how the lighting sensors failed to detect their presence in the living room and bathroom. Such experiences were exacerbated by the fact that some users, such as Sophie and Tiana, used the kitchen light to supplement the dim lighting in the adjacent living room.

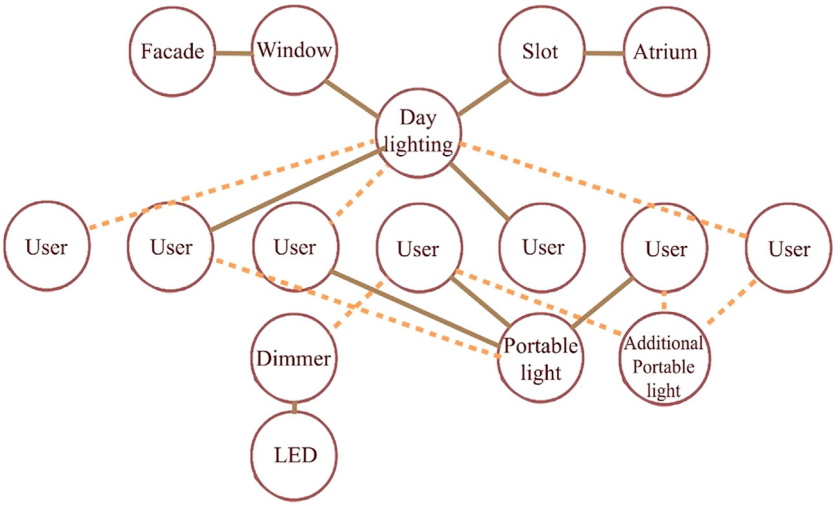

Figure 2.
User translation of the daylighting script

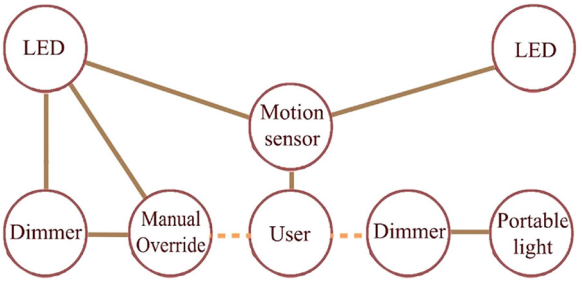

Figure 3.
Illustration of the motion-sensing script

In the second phase, the designers programmed the sensors with an extended time delay. Users like Maram and Maya stated that they finished their activity in the bathroom before the lights turned off, as the lights stayed on for a few minutes after they had gone to another room. Maya was annoyed as she waited for the bathroom light to go off to be able to sleep in the adjacent bedroom. Similarly, Allan had to wait for the kitchen light to turn off so he could watch a movie in the adjacent living room. These examples illustrate multiple misalignments between the design script and user expectations (Abi-Ghanem, 2008; Fallan, 2008a, b; Yiannoudes, 2015) but in these cases, the users chose to support (or at least tolerate) the motion-sensing script.

Other users translated the script to fit their lifestyles. Eman and Tiana tinkered with the design motion sensing script by calling on an intermediary, the facility management company, to adjust the sensors in their units. They requested a longer time delay before the lights shut off automatically. Yan adjusted the script by introducing portable lights that he could control directly. Sophie resisted the script and severed all relations by switching the sensors on and off at the control panel. She boasted that she "disabled the sensors, now they are un-operational." This allowed her to take control of the lights that were previously controlled by the sensor, but created the unintended side effect of having the lights on all the

time and thus impacting the energy efficiency goals of the project as a whole. Abdullah and Mahmoud resisted the motion-sensing script by leaving their units and working at their laboratories, where they could manage lighting conditions more easily.

The motion sensor script illustrates how designers introduce multiple undesirable conditions for users (Fallan, 2008a, b; Rohracher, 2005, 2006) and how they respond in multiple creative ways (Abi-Ghanem, 2008; Fallan, 2008a, b; Harrison and Kjellberg, 2016; Madsen, 2019; Sharif, 2016). Compared to the motion-sensing script (Figure 3), user translations (Figure 4) transformed the weak relation with the LED lights into strong relations, resulting in more active control for the users.

4.3 Script 3: system control

The MIST designers solicited feedback from the users in the first development phase and introduced new lighting technologies in the second phase to address the misalignments between design intentions and user experiences. Notably, they introduced a card system to provide users with greater control over their living environments. According to designer John, the card brought the unit to life as soon as the user inserted it into its holder (similar to many contemporary hotel rooms). All lights turned on, the air-conditioning system restarted and reset its temperature, and the water sensor in the bathroom was activated. Likewise, when the user removed the card to leave the unit, the system initiated a sleep mode that turned off all lights and the water sensor while gradually powering down the air conditioning system. Effectively, the system control script involved a card to mediate the relations between the user and the building services upon entry to and exit from the unit. In this way, the designers shifted the agency from the lighting sensors to the card while also creating new relations with space conditioning and water services (Figure 5). This expansion and change through the system control script resulted in significant translations by the users.

Larry and Maya found it strange that when they entered their units and inserted their cards, they then had to switch off unneeded lights and wait for the sensor-enabled lights to turn off automatically. However, Maya found the card system helpful in switching all lights off when she was in a hurry to leave her unit and did not have time to do so directly. In effect, these users supported the system control script as embodied in the card reader.

Maram stated that one of the problems that complicated the card functionality in managing

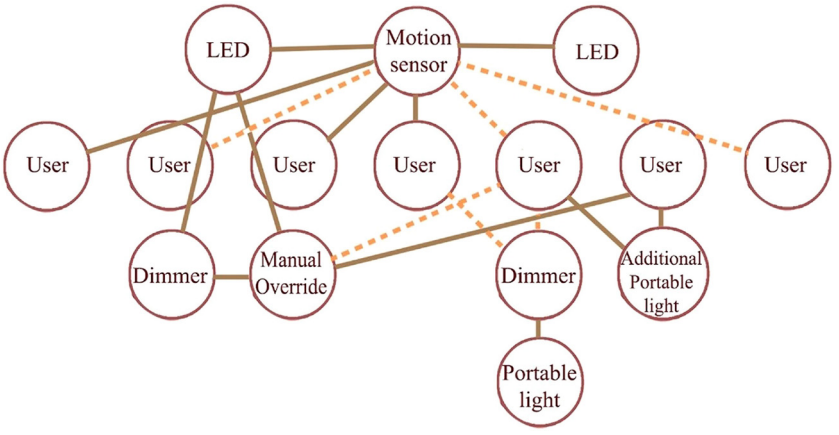

Figure 4.
Illustration of the user translation of the motion sensing script

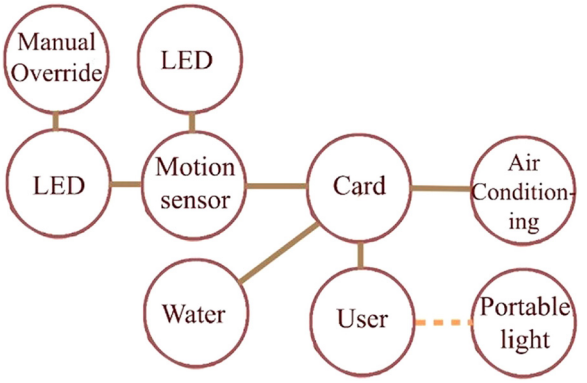

Figure 5.
Illustration of the system control script

light was its connection to all of the lights in her unit. If the card was inserted or removed from its holder, all lights went on or off. Mira, Maram and Aysha added that the card system also connected to the air-conditioning and water sensor, which meant that if they removed the card for any reason, they could not set the air-conditioning or use water in the kitchen or bathroom sinks because the water sensor was deactivated. Thus, bundling the systems together with the card reader created multiple undesirable conditions for the users.

The system control script did not address all of the users' lighting problems and they continued to experience discomfort and disturbance to a certain extent. Additionally, the newly introduced relation with the cooling system and water sensor made the lighting conditions less manageable, which created additional user discomfort and disturbance. Mira, Wajd and Aysha chose to support the script by maintaining the relations as defined by the designer, although these relations did not fit with their expectations and preferences. Maya tinkered with the script by moving her couch in the sitting area away from the kitchen sensor so that it would not detect her movement. She also intentionally walked in the interior part of the unit away from the sensor so that it would not detect her movement when she went to bed. In effect, she tried to "out-smart" the sensor while continuing to conform to the system control script. Larry adjusted the script by partially blocking the kitchen sensor with a piece of tape so that it did not turn the light on unless he passed by a specific area. Allan resisted the script and severed all relations by covering the sensor entirely as he did not want the light on at all (Plate 2). Maram similarly severed all relations by choosing not to fix the light when it stopped working, as she felt it was disturbing. Such actions allowed the users to continue using the card system while limiting the undesirable effects.

In all cases, the users were acutely aware of the importance of the card and its connection to their daily routines. They were afraid of losing the card and some kept it in their units when

Plate 2.
The sensors partly or completely covered by users to modify the system control script

leaving or fixed it to the wall (Plate 3). Javed and Ammar developed a translation through a creative form of card management involving a substitute card made of a piece of paper.

The system control script demonstrates how existing scripts can be reconfigured to align more closely with user expectations but the updated script can still result in user translations (Rohracher, 2005, 2006). These additional translations once again produce building functions that diverge from the intentions of the designers and the goals of the project (see also Akrich, 1992). Compared to the system control script (Figure 5), the user translations (Figure 6) involved the transformation of weak relations with portable lights into strong relations.

5. Discussion and conclusions

The findings from the sustainable lighting strategies at MIST demonstrate how designers script the built environment, where users translate these scripts to fit their lifestyles in multiple ways (Fallan, 2008a, b; Harrison and Kjellberg, 2016; Madsen, 2019; Sharif, 2016, 2020). The scripts of daylighting, motion sensing and system control were translated through an array of reconfigurations including supporting, tinkering, adjusting and resisting that influenced the building performance and user experience. The findings represent a typology of user translations that have been applied to the same script.

Plate 3.
The card is kept above its holder to the left and is replaced by a piece of paper to the right

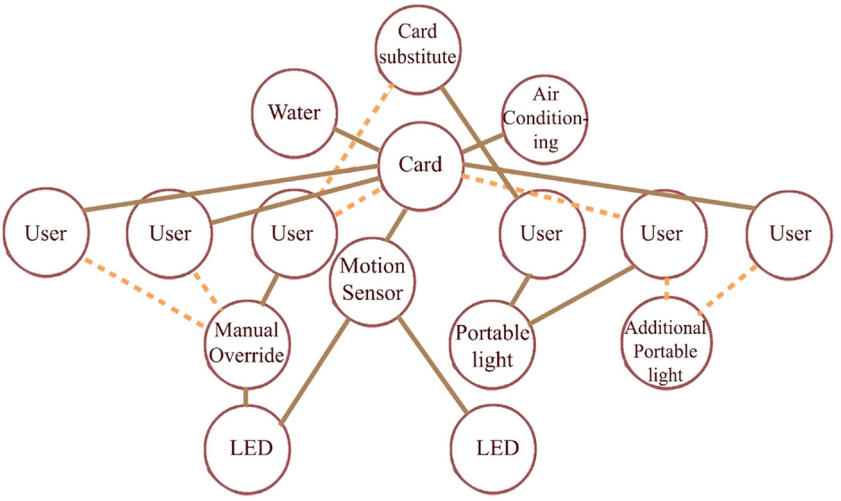

Figure 6.
Illustration of the user translation of the system control script

Supporting involves how users maintain the relations inscribed by designers and adjust their lifestyles to fit the script. Supporting reveals a segment of users who demonstrate full compliance with the design, using it "as-is" without any alteration. Tinkering entails making small modifications to the design script by altering the relations without having significant implications on the designers' intentions or building performance as a whole. Tinkering can be considered a case of partial compliance of users. In comparison, adjusting entails more significant changes to the design script by drastically altering the relations to conform with user desires and needs. Adjusting can be understood as partial non-compliance. Resisting refers to complete non-compliance by users who reject the design script by severing the relations and developing alternative socio-material configurations. These actions accordingly suggest a spectrum of user responses ranging from full compliance to non-compliance and are summarised in Table 1.

It is important to note that these translations occurred through iterative and recursive actions. Even when the designers attempted to re-align the script with users in response to their reactions, the users responded with new translations by establishing, severing, strengthening and weakening the configured relations in new ways (see Kärrholm, 2012; Yaneva, 2009b, 2017). The continuity of translations illustrates how users responded to scripts on a continuous basis. This suggests that the tensions between design and use are never resolved; instead they are in a continuous state of scripting and translation.

The findings from MIST illustrate how scripting and translation processes alter the relations between buildings, users and technologies in fundamental ways (Yaneva, 2009b, 2017). These processes of relation building are heterogeneous (Law, 1987) and are not always logical or predictable (Akrich, 1992). To address this, it would be helpful to include users from the beginning of the design process by utilising user-centred design methods (such as co-design and participatory design) to realise closer alignment between designer intentions and user preferences (Oudshoorn and Pinch, 2003). This would involve formal processes of collaboration during the design phase to reduce subsequent informal processes of translation during the occupation phase. Designers could also benefit from post-occupancy evaluation studies to learn from the emerging processes of translation, informing future design attempts (Rohracher, 2003, 2006). While it is unlikely that this would completely align designer assumptions and user preferences, it would help to smooth the transition from design to use through co-design processes.

The typology of user translations also points towards the need for more flexible scripts that can be interpreted by users in multiple ways. Designers should provide a suite of strategies within a script for users to employ in different combinations to customise their environments to fit their needs. Effectively, this would shift the agency of building performance from the designers to the users. While such flexibility would make predictions about long-term building performance less precise, it has the potential to enhance liveability and comfort in fundamental ways.

The empirical findings from MIST highlight the dynamics of scripting and translating of the built environment, the continuous interplay between designers and users, and the co-evolutionary character of buildings. The focus on these co-design dynamics reveals the multiple ways that users support, tinker, adjust and resist the intentions of designers and how designers respond with new scripts that restart the cycle of translation anew. Recognising the various ways that designers script and users translate building designs can inspire new building practices that can provide more liveable and comfortable conditions for users. Ultimately, this is the hallmark of good design.

Table 1. A typology of user translations with examples from the MIST lighting scripts

Typology	Change in relations	Daylighting	Motion sensing	System control
Supporting	Users maintain the relations inscribed by designers and adjust their lifestyles to fit the script	Adapting to undesirable conditions of dimness and glaring light	Accommodating the frequent triggering of automated sensors	Using the card system as designed
Tinkering	Users make slight modifications to the script by altering the relations without having significant implications on the design performance as a whole	Shutting part of the openings Switching on the lights of the rooms adjacent to the dim ones Placing a portable light on a large suitcase to mimic a ceiling light Overriding the dimmer and using lights at their maximum settings	Calling on an intermediary, the facility management company, to adjust the sensors in the units	Moving furniture and walking away from sensors while doing activities so that the sensors do not detect user movement
Adjusting	Users significantly change the script by drastically altering the relations to conform with user desires and needs	Closing off all the openings Introducing additional portable lights	Introducing additional portable lights	Partially blocking the sensor with a piece of tape so that it does not turn the light on unless the user passes by a specific area
Resisting	Users wholly reject the script by severing relations with the system in favour of alternative socio-material configurations	Avoiding the units or some rooms	Disrupting the system completely and switching the sensors on and off through the control panel Leaving the units and working at laboratories, where lights are more manageable	Covering the sensor entirely Choosing not to fix the light when it stops working

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