Ethnography of Transfer
Exploring the Dynamism of Sustainable Architectural Design in Masdar

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Abstract

The paper aims at providing an understanding of sustainable architectural design through an ethnographic study of Masdar City. Following how design travels from the practice of an architect in London (Foster and Partners (F+P)) and is translated, implemented and used by embracing the inherent dynamism and unpredictability embedded in the process. Focus is on the designs and technologies of Masdar City as the main case study; a project that is designed by F+P and developed in the United Arab Emirates. This has been followed through a two-part ethnographic study that was conducted through fieldwork taking place from January to September 2014. The first part was carried out in F+P office in London, UK, where the designs and technologies were initiated. The second part was completed in F+P office in Abu Dhabi, UAE, where the designs and technologies were implemented and put to use.

> The use of the word 'travel' addresses a design, or a technology, that proceeds through time and place within a continuous loop of interaction through design, implementation and use, defying the linearity and steadiness of such a process and presenting it as more complex and contested.

> The paper focuses on deconstructing the common separation between design, implementation and use, as they are all part of the design process.

Introduction

The paper aims to provide an understanding of the sustainable architectural design process through following the travel of designs and technologies from where they are initiated to where they are implemented; from where they are created by the designer to where they are adapted by the developer and inhabited and interpreted by the user. The use of the word 'travel' addresses a design, or a technology, that proceeds through time and place within a continuous loop of interaction through design, implementation and use, defying the linearity and steadiness of such a process and presenting it as more complex and contested.

The present article draws on Science and Technology Studies' (STS) work that has been conducted by Latour (1986, 1987) and Akrich (1992), and firstly applied to architecture by Callon (1996, cited in Yaneva, 2009b). It is particularly inspired by the work of Houdart and Minato (2009), Loukissas (2012) and Yaneva (2009a, 2009b, 2013), who followed a similar approach and applied it within the field of architecture. The innovative factor in their approach is that they followed the design process within the design practice. Embracing an STS approach and taking a close look at design offices, they presented architectural designs and technologies not as the result of a single, static or predicted set of actors. On the contrary, they revealed them as associated with other human and non-human actors that involve them in continuous translation processes. These studies and analyses, while embracing the network of designs and technologies, including their social and material aspects, do not go beyond the architectural office, where the designs and technologies are initiated. In contrast, this study aims at going beyond this point to where the designs and technologies are implemented and used, by examining their travel from conception to realization.

Although the paper seemingly starts with a simplified trajectory, it focuses on deconstructing the common separation between design, implementation and use, as they are all part of the design process. This is relevant because sustainable architectural designs and technologies are commonly presented as simple and static (Guy and Moore, 2005; Moore, 2001). Yet,

upon closely following the complex and continuous chain of interactions in the design process, it is clear that designs and technologies do not emerge from simple contributions and do not merely land, stabilize and stop evolving upon their delivery. Through such following of designs and technologies, the present article suggests an 'ethnography of transfer' which accounts for the travels of design concepts and ideas. In other words, it does not limit the examination to architectural offices, but goes beyond them, while closely following the dynamics and interactions of the design process.

The travel of design: the case of Masdar City
Masdar City has been designed by F+P and developed in Abu Dhabi, United Arab Emirates. It is a globally-re-nowned example of a sustainable urban master plan that supports the research and application of tech-nological breakthroughs and innovation. The project is still being built, which provides an opportunity to follow its design process in the making (Figs. 1, 2, 3) The importance and relevance of the case of Masdar City lies in the fact that it follows a technocratic ap-proach to sustainability, as explained by authors such as Frampton and Moore (2001), Guy and Moore (2005), and Moore (2001). Sustainability is viewed through a technological lens in the field of architecture and urbanism. Through such a lens, sustainability focuses on efficiency in matter, energy and space, utilizing building science as a main approach and emphasizing physical attributes and their application to buildings. Such analyses attempt to document the extent to which buildings and cities are, or are not, sustainable through the use of realistic interpretations, numerical conceptions and indicators of footprints, flows and other values. The technocratic approach utilized to serve sustainability in architecture shows how mod-ern issues faced by communities resulted in what ap-pears to be a hierarchy of forces where science could drive specific responses (Latour, 1993). It also shows how such contemporary matters lead to what appears to be a dualism between technology and society. Drawing on Latour's (1986, 1987) and Akrich's (1992) networked nature of technology to track the network through which the designs and technologies were ac-tuated, the article will trace the networks of Masdar,

The importance and relevance of the case of Masdar City lies in the fact that it follows a technocratic approach to sustainability, viewed through a technological lens in the field of architecture and urbanism.

Fig. 1 - Masdar in design.
(Source: WSP, 2016, http://www.wsp-pb.com/en/-WSP-au-nz/Sector-Areas/start/-What-we-do/Project-Case-Studies/Masdar-Institute-of-Science-and-Technology)

Fig. 2 - Masdar in development.
(Source: Hope, 2012, http://www.construc-tionweekonline.com/article-17596-site-vis-it-masdar-institute-phase-1b)

Fig. 3 - Masdar in use.
(Source: Arabian Business, 2016, http://www.arabian-business.com/masdar-city-free-zone-seeks-quadruple-tenants-by-2020-627804.html)

as they are not restricted to the designers and developers who have their own negotiations and conflicts over the design, but also includes other actors, notably the users, who contested the network. Such shifts create designs and technologies that are not the same as at the beginning of the process, providing feedback into their relevant concepts. The aim of this paper, by tracing the network (Latour, 1993) of technology transfer, is to allow for defying the modernist distinction between technology and society.

An ethnographic approach to study transfer
The research is based on a qualitative, inductive methodology informed by an STS approach. More specifically, it relies on Actor Network Theory (ANT) based on the scholarship of Callon (1986), Latour (1986, 1987, 1993), Law (1987, 1992), and Law and Callon (1988), to develop an understanding of designs and technologies. It builds on the insights of Latour (1986, 1987) and Akrich's (1992) networked nature of technology, where designs and technologies are not attributed to a single actor or shaped in a singular, straightforward and detached manner. On the contrary, they involve networks that evolve through a multiplicity of social and material aspects; human and non-human actors, where all are involved in the translations processes.

To do this, the present article is based on an ethnographic method that follows the designs and technologies and their travel through design, implementation and use, while capturing the complexity, dynamism and unpredictability connected to it. To adhere to the challenges of following the different "realities" and providing "thick descriptions" about them, discussed earlier by Geertz (1983), Yaneva uses the term "new ethnography" to refer to ethnographies that "follow the principles of no hierarchy, attention to the detail, symmetry: noticing what happens between humans and non-humans, undivided attention to words and the gestural and non-verbal language" (Yaneva, 2017, p. 45). Although a similar term was used by Goodall to refer to the reflexivity of ethnographies, where researchers examine themselves as much as others and the context (Hermann, DiFate, 2014; Goodall, 2000), Yaneva extended the term by giving weight to the non-human actors; she also refers to the figure of

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"slow ethnographer", who is distinguished from what she calls the "hasty sightseer" (2013, p. 122). Where the former refers to a dynamic understanding of the processes, the latter demonstrates an understanding of mere static objects.

The ethnographic study on which this paper is based traced and followed what every actor said and did, with the researcher giving the space to speak and act. It involved non-human actors as the researcher observed them and asked questions about them uncovering the actors that, although do not speak, still act while involving and engaging the different actors. Such methods follow the narratives and stories that uncover how decisions were made through the design and development and how they were grounded through implementation and use. The researcher went back and forth between the different human and non-human actors with the aim of finding how the networks are shaped and reshaped through such processes. The fieldwork was conducted in two parts; the first is concerned with the design and initiation of designs and technologies and follows the design office in London. The second discusses the implementation and use by following the design office in Abu Dhabi as well as the end users. The study includes site observations and interviews with six designers from F+P in London, six developers from F+P in Abu Dhabi and twelve users who are referred to in the text by pseudonyms to guarantee anonymity.

Masdar City's design as seen by designers
At the onset, F+P, the largest design office in London, was the main actor steering and controlling the design processes. The first part of the ethnographic research was conducted there. It engaged with the design process as a network and how it is intended to be translated in a specific way. It also followed the distribution and redistribution of agency between the different actors. Latour (1986, 1987) and Akrich (1992), in their work on technology, talk about the power of the designers (or the inventors) as the main contributors that influence technology. With their intentions, imaginations and expectations, designers envisage the ways of adaptation, appropriation and use of technologies in reality. They draft the way through which technology proceeds from design to implementation and use.

Two of the master designers, George and Ralf, explain the design story from its onset, as both were in charge of formalizing its main conceptions and designs in relation to sustainability. They mention the very beginning, when the government of Abu Dhabi, the main stakeholders of Masdar City, held a competition in 2006. The key challenge is that sustainability includes a variety of aspects to target, each having its own importance. In addition, sustainability is in itself a contested concept: each stakeholder tackles it from a different perspective according to their own agenda. This makes the requisite hard to fulfil in one single competition entry. The government of Abu Dhabi looked for a design that would accommodate the multiple possible interpretations of the concept: in other words, a design that would comprehend and utilize the different views and practices of sustainability. There were several local and international competitors, among them were F+P and ARUP, each having their own approach to targeting the competition challenge.

George clarifies how they thought and worked on the competition as they realized its challenges. He says:

The interesting thing was that, for us, there were lots of people, and there still are around the planet, talking about sustainability and doing bits of sustainability. And one of the difficulties is that there is not one person that you can go to, there still is not, but there are lots of people around with lots of individual pieces of knowledge, which if you connect together become more interesting. (Interview with George, 18 February 2014, London)

With this, they envisage that such multiplicity develops and grows from within as well as beyond the firm itself. F+P started to invite other teams and individuals from different disciplines including PHA-Consult as well as RW Armstrong. Each took part in the project and participated with their own interpretations and experiences in regard to how they view and practise sustainability. In other words, F+P blended the outside with the inside. They enrolled and enlisted the different perspectives and debates to understand and reproduce what sustainability could be.
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they realized that the potential of the solution is how to align and put together the different views and practices of sustainability. George further clarifies:

They had themselves been off around the world and looked at projects taking place and they had come to the conclusion that there were lots of sort of dispersed pieces of information that we created that nobody is putting together, which is why they wanted to create Masdar. (Interview with George, 18 February 2014, London)

Such implicit agreement has its importance among the key actors of Masdar City as they attempt to explore the different ways to understand and practise sustainability. In this way, and from the earliest stages of the project, Masdar City has not relied on a single actor, but on a multiplicity of potential actors, although a preference was shown for those who had specific insight and experiences in the field of sustainability.
This aspect of multiplicity aligns with Akrich and colleagues' (2002a, p. 189) argument, which emphasizes the designer as an actor who is actually one of multiple actors that form the design body and participate to the process in different ways. In other words, there is no single author, but several contributors, and innovation "is more and more a result of a network activity and no longer the monopoly of an inspired and dedicated individual." With such an explanation, they suggest that the design body configures the network in a specific way and involves a particular translation process. While the design activity had primarily been conducted in London at that stage, the design body has its own specific agency as main actors and contributors in the process.
Designers George and Ralf explain that they were handed the site allocated for the development by the Abu Dhabi government. It was about 18 kilometres outside Abu Dhabi, next to its airport, with a triangular shape (Foster + Partners, 2007; Masdar City, 2011). While the government sought a design that would show a connection to the old Arabian city giving a reminder of the identity of the place, F+P aimed for a design that would be modern and futuristic and give a vision of what a sustainable city could be. The debate reached a point where the potential design reinterpreted the old to envision the future.

Ralf explains that they looked at examples of different cities like Shibam in Yemen, Aleppo in Syria, and Marrakesh in Morocco. Working on the site and referring to the historical Arabian cities, they studied the morphology of the city. They accordingly designed the city to include one big main square around which its services would be located. According to George, the question was then, if the city was of a very defined shape, how might it expand in the future. Another issue was the source of power generation and location of supporting services. They accordingly attached another smaller square to support potential expansion and host power generation facilities for the city. Referring again to the site and the inspiration from historical Arabian cities, the city was dense and mixed in use for cultural and climatic reasons. They chose these characteristics as guidelines according to which the whole master plan would be designed and developed. At that stage of development, the design was presented to the government of Abu Dhabi, who awarded the project to F+P (figs. 4, 5).

Although most of the city design and development work took place in London through a process that involved George and Ralf in addition to other various design actors, further design and development work took place on-site in Abu Dhabi through a process that involved other F+P designers such as Augustine and Jim. Both parties had debates, discussions and agreements along with the developers in Abu Dhabi such as Isaac, Charlie and Mike. They met frequently and communicated continuously to negotiate the design that would afterwards travel from London to Abu Dhabi.

George mentions further examples of such moments of debate, during which the ideas for the wind-tower and air-conditioning were negotiated between the different parties. The designers thought to have dedicated wind-towers, inspired by traditional ones, to provide natural ventilation to the buildings in order to reduce energy consumption for air conditioning. The developers, on the other hand, thought that having such wind-towers could lend an unpopular industrial appearance to the city. The discussion resulted in designing one central outdoor wind-tower instead of many smaller ones. It also resulted in rethinking the way air-conditioning could be provided inside the

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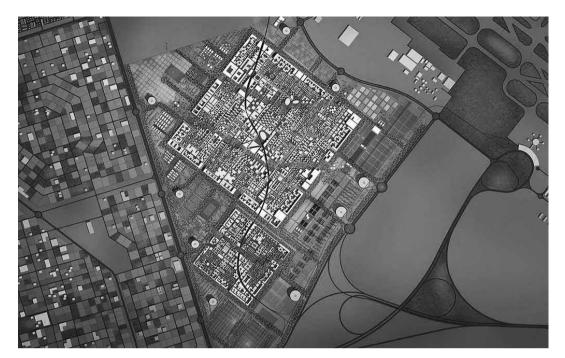
Fig. 4 - Masdar 3D masterplan. (Source: Transsolar, 2017, http://trans-solar.com/projects/masdar-city)

The main actors of the Masdar City project, all contributed to the network that shapes and creates the project and advances its sustainability aims and targets to be translated in specific ways.

buildings to reduce energy consumption by employing a controllable system that assists the user to be 'more sustainable'. Such negotiation process defies the purifying practice that defines modernity (Latour, 1993), where different environmental and social aspects were imagined as disconnected. The story of the wind-tower and air conditioning shows how a network is constructed out of interlocking and interacting aspects that can never be disconnected. In this way, and with reference to the networked nature of technology, the main actors of the Masdar City project, originally the designers from London, incorporated the designers and developers based in Abu Dhabi, as all contributed to the network that shapes and creates the project and advances its sustainability aims and targets to be translated in specific ways. Although the design activity was primarily done in London at that stage, the actors from Abu Dhabi had a specific agency as main influencers and contributors, affecting the design in the process.

The city's original concept includes residences, laboratories, factories, movie theatres, cafés, schools and other utilities similar to any normal city. According to designers George, Ralf and Augustine, as well as developers Isaac and Charlie, its main difference is that it is inspired by technocratic targets. The aim is to create

sustainable buildings that engage with the problem of climate change and global warming worldwide as well as the depletion of oil resources in the Gulf. The technocratic approach focuses on efficiency and renewable energy. This entails emphasizing technical, environmental and economic aspects through tackling consumption and production problems. To achieve this, it utilizes building science, which emphasizes physical science and its application to buildings. Such application entails gaining more scientific knowledge about buildings and cities and how they perform physically (Guy, 2006; Hutcheon, Handegord, 1983). This includes utilizing adaptive and modern solutions with potential reliance on quantitative analysis, numerical interpretation and scientific measures. The reason for utilizing building science is that it provides readable data on how buildings perform, which inform the negotiation and provides tangible proof for the designers and developers of the workability of the solutions employed.

Augustine elaborates on how they designed the air-conditioning system to be efficient and based on renewable energy sources. This is based on drawings, models and diagrams that quantify the energy demand and use. A sensor system was installed to fulfil the designers' expectations by controlling the usage

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and limiting it to when the buildings were occupied. At the same time, it helps the users to be more sustainable. In this way, the designers, developers and other related human actors have their focus on efficiency and renewable energy as aspects that appear to have their own share of contribution as non-human actors to the design network and the expected translation processes. Designers and developers interact with each other in addition to their drawings, models, and diagrams and other tools and analyses that are based on such aspects, having their own specific agency in the process.

Following Masdar City through design implementation
As mentioned before, the design process was not limited to the design office in London. While the designs and technologies of Masdar City were mostly developed there, a multiplicity of actors had been involved through negotiations and discussion affecting the network and its expected translation. As the designs and technologies travelled through design, implementation and use, the ethnographic study travelled with it to follow the narratives and stories that uncover how the design was grounded through implementation and use. It engaged with the growth of actors and the distribution of agency of such complex and continuously-growing and changing actors.
Augustine, one of F+P designers responsible for the implementation side, reflected on the multiplicity of contributors affecting the project's execution. He says, as the project took off from the 'inside' of the practice to the 'outside', "there was a huge amount of people involved. There are obviously the contractors, there are the consultants, there are project managers, the client has his delivery team, so there is a huge number of people involved" (Interview with Augustine, 27 March 2014, Abu Dhabi). In other words, different perspectives and debates were enrolled and enlisted to reproduce what sustainability could be. Augustine elaborates on the negotiations that further affected how the project was implemented as he continues, "So you find yourself in a situation where you have pressures and all the general everyday problems in the construction industry." He explains that "this pressure can come from aspects such as cost, quality, time and sustainability". He adds that these are four

aspects that must be balanced, where if the focus is on one, the other three suffer (Interview with Augustine, 27 March 2014, Abu Dhabi). Jim, another F+P designer from the implementation side, mentions that as they implemented the air-conditioning system, they needed to submit it on time while it would have needed one year of inspection for defect liability. The developer pushed for handing the project over on time. Charlie explains that any delay in the project submissions would add to its cost. As the designer needed to submit the project on time and not cause any delay, Jim explains that this did not allow for inspecting the project during the following year, which created pitfalls in the system. In this case, quality suffered as a result of stress over time and cost.

This argument extends the previous debates defying the purifying practice that defines modernity. This time the networks that are constructed are not only within the practice itself, but go further to include interlocking and interacting aspects from the field that in turn cannot be disconnected. The constructed networks entail that "a difficult negotiation has to be settled" (Latour, 1983, p. 155). With several actors getting involved, multiple negotiations take place; pulling and pushing as well as involvements and dis-involvements, shaping and reshaping the network and translating it in many ways. The question remains, in order to construct an argument to follow the project as it moves from inside the practice to the outsider field: what constitutes this 'movement'? Instead of movement, there is a network shaping, changes of relations and translations. As this is applied on the travel of designs and technologies, actors change and the agency gets distributed and shared differently. This said, design processes are dynamic as they keep changing, reacting and interacting with their actors and agencies.

Jim says, "Things work correctly on models and paper, but when they are done in reality, they change" (Interview with Jim, 12 March 2014, Abu Dhabi). The designs and technologies relied on efficiency and renewable energy and adapted careful analysis, interpretations and measures to guarantee successful results. However, they have not been implemented in the intended way. Jim refers to the example of air-conditioning, which needed multiple revisions in-be-

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tween what was theorized and what was experienced in practice. This implies that another part of actor negotiation, this time involving non-human actors, is the one conducted through drawings, models and diagrams and other tools and analyses. The physical and computational analyses that promised certain outcomes as the designers initiated designs and technologies, seem to be fulfilled in a different way when they land on real ground, as they are scaled up or down and turned from simulation to reality.

Here, the question of the 'movement' of the project from micro model to macro reality or from soft intangible data to the hard tangible environment is another debatable one. There is no beginning or end of such relation, no linear process and the relation is more tangled, confused and even messy. There is no specific movement with a determined direction. As this is applied to the designs and technologies that travel from London to Abu Dhabi; from tools and analyses to reality, the network and agency are distributed and redistributed in a more complex and changeable manner. Between what has been initiated and designed and what has been implemented, there is a spectrum of changes that designers need to adapt because they find that they do not work as expected or enter into negotiation with other actors involved in delivery or construction.

Thus, we see that designs and technologies are not limited to what takes place in the design office as they extend beyond that. The Masdar City air-conditioning system is no longer the system that was designed in London as it changed while being developed in Abu Dhabi. What happens with the designs and technologies as they fall into the hands of the implementation actors and as they are negotiated with the design actors is part of the design process itself. Implementation is a part of such process that changes and reshapes the designs and technologies in different ways through a contested and dynamic loop of interactions.

Masdar City through use
Beyond the actors of design and implementation involved in London and Abu Dhabi, there is a whole spectrum of other actors that could participate, marginally or comprehensively, in devising and adapting the designs and technologies. Those actors are the users, who live and work in Masdar City. They hold a

specific importance as they interpret and experience the design intentions, expectations or imagination in particular ways. In other words, users are introduced and incorporated into the network and its translations. As the designs and technologies travel through design, implementation and use, the designers' agency decreases as they are now in the hands of the users shaping and reshaping them in different ways. Yaneva's (2009a, 2013) monograph hints at the user contribution in the design process. Other STS scholars such as Brian (1994, cited in Yaneva, Guy, 2008) and Gieryn (2002) explore similar contributions, although not through exploring design processes as in Yaneva's work, but through investigating the matter from the perspective of its use. This part, however, shows the user contribution as part of the multiplicity of actors that grows within the design process through its progress as an extension of Yaneva's work and similar mentioned monographs. This issue has indeed been demonstrated in the case of Masdar explored here through the progressively decreasing involvement of designers, although they still aimed at continuous engagement. George and Ralf in London mention that they sent photographers to Masdar City and attended events. Augustine and Jim in Abu Dhabi explain that they visited and experienced the different designs and technologies in practice. They were interested in how their designs and technologies were received by the users, and wished to discover their different reactions and contributions.

Jim explains that, on top of the challenges faced in the design and implementation phase of the air-conditioning in Masdar City, users faced further, and rather unforeseen challenges. This happened partly because of the designers' main intention in designing controllable technologies monitored by thermal and occupancy sensors that assist the user to be more sustainable; partly as a result of the pitfalls that happen in the implementation stage. Users were accordingly unable to switch the air conditioning on or off. Majd, a user, says that even if the weather was relatively cool outside, she is unable to turn off her air-conditioning. Jasim adds that people are different. Where some could be satisfied at a specific temperature, others could need a higher or a lower temperature to feel comfortable.

The reactions of the users varied in light of the circumstances. Aya, Majd and Taha aligned with this

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system and utilized the available system features, lowering their own expectations in the process. Aya comments that she is used to the air-conditioning and she needs to align with it as there is nothing else to do. Others, such as Jasim and Husam, tinkered with the system by continuously calling the maintenance company in charge of their building to adjust the temperature. Husam adds that the problem with calling the maintenance company is that every day there is a different temperature and the air-conditioning should be adjusted to that difference. Rahim and Aghlab reconfigured the system on their own by opening windows to allow hot air to come inside or by using heaters when it became colder than desired. Rahim says that he is not sure if bringing in heaters is allowed on campus, but it is a necessity for him in such a case. Others such as Khaled resisted the system completely and accessed the control board trying to disable the sensors or switch off the air conditioning, reclaiming the agency back from technology itself; being part of the actors involved in the process.

The different reactions of the users challenge what is technical and what is social as each aspect cannot be approached without the other. This time the networks that are constructed and grown within the practice through the design and later implementation, went beyond that to reach the users and present further interactions and interlocking relations, which emphasizes the fact that separation is not a way to tackle such a relation. As these networks are re-shaped and re-constructed further, they become uncontrollable and irreversible. In this way, as different human and non-human actors were included and excluded, engaged and dis-engaged through the experiences and adaptation, the network has translated unexpectedly. The discussion represented specific designs and technologies that were initiated with a specific logic of efficiency, renewable energy and user satisfaction. However, as they travelled, issues such as comfort and convenience were negotiated differently amongst users, who had their own agency in reconfiguring and adapting the systems to align with their expectations. In this case, what was designed, shaped or modelled conceptually did not ultimately work as expected within the lived environment.

Towards a design ethnography of transfer
Following an Actor-Network-Theory inspired ethnographic approach and utilizing the work of Latour's (1986, 1987) and Akrich's (1992) was the key approach to studying the network through which designs and technologies travel. Houdart and Minato (2009), Loukissas (2012) and Yaneva (2009a, 2009b) addressed the notion of the network through ethnographic studies that focused on the design practice. This study extended the ethnographic methods further to the sites of implementation and use (without limiting the ethnography to the site of architectural practice). The networks of sustainable design at Masdar extend beyond the design and development actors to include the implementation actors and the users as well as the material aspects of both. Such actors reconfigure the network and adapt designs and technologies in particular ways while recreating the associations between what is designed and implemented and what is used and translating it differently.

To follow the designs and technologies and their travel through design, implementation and use while capturing their complexity, dynamism and unpredictability, the paper adapts an ethnographic view that captures the situation slowly and incrementally. The present article goes beyond the traditional ethnography that focuses on a particular place and time. It suggests the term 'ethnography of transfer', which still follows Yaneva's (2013, p. 122) "slow ethnographer" but moves and transfers with the travel of the designs and technologies. With this, it follows the ups and downs, the pulling and pushing and the different changes of design ideas as they travel across different places. It engages with designs and technologies that travel from London and 'land' in Abu Dhabi, and are affected by the different contributors from the two different contexts. This could require more effort in unpacking the design processes, but it will not be limited to a specific context from which the designs and technologies travel as they are important to keep track of its dynamism as it is handed to other offices and contributors.

The 'ethnography of transfer' allows us to unpack the design process through a specific lens. Firstly, it uncovers the process as an emerging and continuous outcome of the interaction through design, implementation and

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use, where designs and technologies do not merely land and stop evolving upon their delivery. Secondly, it allows us to reveal what happens within the design process without any judgement to be made on a completed event, without any criticism or celebration of the final outcome and without emphasizing the cause and effect of these results. Thirdly, it allows us to reveal the realities – within the design process - where designs and technologies are not static, and where their surroundings are not passive receivers in a binary or straightforward movement. Rather, they affect and become affected by different surrounding aspects in different ways that this paper has aimed to continuously explore and unpack. Such exploration does not only explain the travel of such designs and technologies, but also provides a new perspective from which they could be seen through the 'ethnography of transfer'.

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