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Refugee Shelter in a Logistical World: Designing Goods for Supply-Chain Humanitarianism.

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Abstract Focusing on the design and production of the IKEA Foundation "Better Shelter" and on its use in a camp on the island of Lesvos, Greece, this article explores the role of logistical calculative rationales in the provision of emergency shelters to refugees. It argues that an engagement with the critical geographies of logistics contributes to the study of such "humanitarian goods" in two main ways. First, it foregrounds the technologies that allow emergency shelter products to circulate across production sites and disaster and border zones, and their connections to broader infrastructures and commercial networks in what recent literature has called "supply-chain humanitarianism". Second, a logistical lens highlights the disruptions that characterize the production and usage of emergency shelter products. The analysis adds to a body of work that exposes humanitarian technology and design as sites of friction, deeply embedded in global processes of bordering and accumulation.

Keywords: supply-chain humanitarianism, humanitarian goods, refugee shelter, Lesvos, IKEA Foundation.

Word count: 8,706

Introduction

An "outstanding contribution to the issue of global displacement": this is how the global insurance company Beazley describes the work of the Swedish social enterprise Better Shelter on its website.[1] At the end of 2016, in partnership with the company, the London Design Museum awarded Better Shelter with the "Beazley Design of the Year" prize, a decision that sparked as much criticism as interest among architects and designers (Scott-Smith, 2017). The "design of the year" was a 17,5 square metre hut in metal and foamed plastic, with a lockable door, a photovoltaic panel and a light, officially named Refugee Housing Unit (RHU). A combination of Swedish functionalism and IKEA-inspired hominess, its pitched roof made the shelter look incomparably more welcoming and cozy than other temporary housing models. At the same time, the maximum lifespan of 3 years – nearly triple that of a standard tent – promised a new, easily assembled solution to the refugee camp question. A little over a year before the prize was awarded, after running a pilot with 60 prototypes together with the company, the United Nations High Commissioner for Refugees (UNHCR) had ordered 30,000 housing units, to be deployed in camps around the world. Better Shelter had thus become one of the main emerging actors in the global humanitarian market. By 2020, it was present in 50 countries, from Peru to Indonesia, used as emergency family shelter, storage space for humanitarian operations and, from the beginning of the Covid-19 pandemic, as a quarantine facility in refugee camps[2].

Among the innovative characteristics that won Better Shelter the prestigious Beazley prize, the jury focused in particular on one. The new product, they highlighted, provides "safer more dignified homes" to displaced people worldwide. In doing so, it "utilises flat-pack technology used in furniture design and has repurposed it to create a shelter that can be easily assembled and transported". Shipped from the Danish-founded logistics multinational DSV's warehouse of Gdańsk, in Poland, the shelter comes "in a two-box kit along with all the required tools", and is "easily assembled in about four hours". In other words, its potential for transforming responses to global displacement crises lies in maximising the contribution of IKEA logistics to humanitarian relief – through design, delivery and usage.

Drawing on field research conducted in Sweden and in Lesvos, Greece, this article explores the spatial politics of providing shelter to refugees through such transportable, flat-packed huts. In doing so, it engages two main bodies of social scientific work. First, it draws on theorizations of logistics as a "calculative logic and spatial practice of circulation" focused on measurement and transportability, which lies at heart of contemporary global configurations of capitalism, war, and emergency and humanitarian response (Bonacich and Wilson, 2008; Chua et al., 2018: 617; Cowen, 2014). Within this now substantial body of work, recent analyses have highlighted the central role logistics plays in the humanitarian field. In what Rafeef Ziadah (2019: 5) calls "supply-chain humanitarianism", commercial logistical management techniques – from prepositioned warehouses to mathematical cost modelling – shape the alleviation of suffering through aid. Here, I build on these insights to explore the relation between logistics and the politics of designing and producing objects specifically conceived as tools for humanitarian aid. Second, this article contributes to debates on humanitarian goods (Cross, 2013; De Laet and Mol, 2000; Duffield, 2018; Redfield, 2012, 2016; Scott-Smith 2015, 2018). Informed by Science and Technology Studies (STS) and Latourian epistemologies, this literature, albeit with significant variations, has focused on the ontological fluidity, adaptability and mobility of objects aimed at sustaining life where fixed-grid infrastructures are absent or failing. The article adds to these insights by addressing humanitarian design's embeddedness "in the very substance of production" (Latour, 2008:2). This is done by unpacking the logistical rationales that connect humanitarian objects to global circuits of value production, extraction and circulation, and indeed to their ever-present disruptions.

Logistics is the art of managing complex operations and efficiently transporting goods and people around the world. Primarily a military art throughout the modern era and until the end of the Second World War, it became a core managerial science and practice through post-war capitalist expansion, particularly after the important technical innovations introduced during the 1960s, most notably the shipping container (Levinson, 2008). As Rodrigue and Notteboom (2009: 1) argue, "no other technical improvement has more contributed to the process of globalization than the container". Thanks to it, the 1960s "logistics revolution" (Bonacich and Wilson, 2008) was the intimate, material, often hidden but indispensable basis for late capitalist global development. Since then, logistics has expanded "to the management of the entire supply chain", from product design to warehousing and sales (Bonacich and Wilson, 2008: 3). At IKEA, the Swedish multinational furniture retailer whose charitable foundation is the main partner of Better Shelter – and indeed, as discussed below, essentially contributed to its international affirmation – an estimated 25% of the total workforce is employed in logistical tasks. The company stands firmly among the 10 major importers of containerized goods into the world's largest economy, the United States (Bonacich and Wilson, 2008; Johnson, 2018). *Forbes*' writer on logistics, Robert

Malone (2005), paraphrased American modernist architect Louis Sullivan's famous claim that "form follows function**"** to explain how, at IKEA, "form follows logistics". Faithful to its "air out, product in" motto, IKEA design responds primarily to the need to fit products efficiently into flat packs, and flat packs into shipping containers. Any waste of space would jeopardise the company's purported mission of globalizing Swedish minimalistic functionalism – an aesthetic and commercial ethos captured by the Swedish word *lagom* ("just enough"; see Murphy, 2015; Scott-Smith, 2017).

This article examines how, through the encounter with the UNCHR's own complex, bureaucratized apparatus of emergency response, the Better Shelter RHU translates this logistics-centred model to the global humanitarianism. In themselves, supply-chain rationales in humanitarian aid are far from a new phenomenon. The history of modern humanitarianism is intertwined with that of military logistics, and multinational companies like the Belgium-based Alpinter, which manufactures the UNHCR family tent, have been working at the intersection of logistics and humanitarian design for decades. As an organizing rationale, however, logistics has remained somewhat understudied and undertheorized in critical geographies of humanitarianism. Here, I show how an engagement with critical logistics can productively complicate existing debates on humanitarian goods by better accounting for the rationales that shape their production, circulation and branding.

In what follows, I first outline the theoretical premises of the paper by putting literature on critical logistics in a dialogue with theorizations of humanitarian goods, and outline the field research conducted for the article. Subsequently, I explore the role of both IKEA and UNHCR logistics in the shelter's ideation, design and marketing. In the third section, I turn to the Better Shelter usage in the camp of Kara Tepe, in Lesvos, Greece, in 2016-2017. In the conclusions, I reflect on supply-chain humanitarianism's reliance on ready-to-assemble, cost-effective products aimed at managing protracted precarity, and on the power of their trivial, do-it-yourself logistics and familiar "branding".

Humanitarian logistics and humanitarian goods.

> *Today, any designer knows that a commercially successful product needs to be easy to assemble and transport… it should occupy as little space as possible in a shipping container. Why would ours be different?*
>
> Interview with Better Shelter designer 2, 13 December 2016.

In a world where supply chains are so pervasive that have become central to the "dilemmas of the human condition" (Tsing, 2009: 148), logistics appears as the omnipresent "how that shapes the what" of our material and social lives (Cowen 2014: 30). Humanitarian aid is not exempt from this global hegemony. Yet engagements with humanitarian logistics in human geography and other critical social sciences remain scarce (for recent exceptions, see Attewell, 2018; Moulin and Magalhães, 2020 and Ziadah, 2019). In business, economics and managerial sciences, on the other hand, the expansion of the technoscientific discipline of humanitarian logistics (HL) is dizzying (see Ziadah, 2019). In a recent agenda-setting paper, Oloruntoba et al. (2018) identify seven rapidly developing areas in the sub-field that they name "refugee logistics" (see also Scholten et al., 2018). These include the sourcing and deployment of refugee shelter, the tension between temporary logistical solutions and the protracted nature of contemporary displacement crises, and

design and facilities layout in conditions of protracted encampment. The shelter kit studied in this article addresses all of the last three issues.

Genealogies of civilian logistics are an important starting point in this analysis. Since the 1960s, thanks to radical changes in the technical and financial domains, logistics and supply chain management have ceased to be a mere complement to production to become the undisputed core of profitability regimes (Tsing, 2009). A fundamental component of manufacture processes in their own right, logistics now extends from design to consumption, and determines the global location of corporate headquarters, factories, warehouses and, consequently, labour (Cowen, 2014; Tsing, 2009). Examining these changes, Cowen (2014) has meticulously traced logistics' expansion from the military to trade, to argue that the 1960s developments made the boundaries between the civilian and the martial in the art of circulating goods ever more porous. This is evident in particular in the rise of supply-chain security (SCS), a new management model for the protection of cargo that led to the re-spatialization of violence and security from "territory and people" to trade and circulation (Chua, 2017: 168).

That the "logistics revolution" would be linked to the ways in which aid and relief are delivered globally, then, should come as no surprise to readers aware of the intimate entanglements of humanitarianism, war and violence that have marked late modern history (Attewell, 2018; Lopez et al., 2015; Malkki, 1995; Ziadah, 2019). The work of Mark Duffield (2010; 2011; 2018) has authoritatively shown how the aid industry has been a driving force in the re-spatialization of security diagnosed by Cowen (2014), particularly, but not exclusively, in the Global South. Building on his analysis of the United States Agency for International Development (USAID) material support to the anti-Soviet insurgency in Afghanistan, Wesley Attewell (2018: 734) argues that "development and humanitarian interventions functioned during the Cold War as dense transfer points of logistical knowledge between military and civilian actors". In these rigorous and important genealogies, critiques of humanitarian logistics focus on the politics of circulation through the lens of biopower and necropolitics. In other recent work, the military-humanitarian logistical nexus and the role of semi-peripheral countries as supply-chain hubs for aid organizations is foregrounded (Ziadah, 2019). Less attention, however, has been paid to the role of logistics in the production and distribution of goods that are supposed to "do well" (for shareholders) while "doing good" (for people in need) – goods that are specifically produced to be bought and used by actors operating in humanitarian settings (Cross, 2013: 371). This essay sets out to address this gap.

There is now a substantial body of research, across disciplines, concerned with the politics of the objects, goods and infrastructures through which aid materializes, from shelter kits to cars and cash distribution networks (Donovan, 2015; Fredriksen, 2014; Redfield, 2008, 2012, 2016; Smirl, 2015). Nearly two decades ago, the germinal work of Marianne de Laet and AnneMarie Mol (2000) on the Zimbabwean bush pump set the tone for subsequent debates on the matter. The bush pump, de Laet and Mol (2000) write, is a lovable object (doing good), whose success (doing well) rests on its technological *fluidity*. Having loose boundaries and foregrounding a distributed and non-human centered notion of agency, the pump is at the same time modern (bringing clean water to everyone in need) and non-modern (functioning off the grid in rural Zimbabwe, see also Duffield, 2018).

Subsequent studies of technological fluidity in humanitarian goods and design share this orientation towards technoscientific ontologies, and a tendency to focus primarily on the object as an actor in emergency and underdevelopment contexts. However, unlike de Laet and Mol's (2000) bush pump, a non-commercial item that was central to Zimbabwe's community and national development projects, the goods examined in this more recent body of work are commercial objects enmeshed in market-based economies (Cross, 2013; Redfield, 2012). While centering the humanitarian imaginaries that sustains it, Redfield (2008) highlights how the Medécins Sans Frontièrs' (MSF) emergency response kit is the product of logistical standardization that has its roots in military, medical and business histories, and which aims to emphasize speed and disposability over durability. In his work on Plumpy'nut®, a therapeutic feeding product used to treat malnutrition, Scott-Smith (2018: 16) offers an interesting account of the complex patenting and property structure of the product, and writes about how transnational activists including the Indian Right to Food campaign accused it of "distorting local markets". Duffield (2018: 167) invites us to look at humanitarian design objects, including emergency shelters, not simply as substitutes for a fixed grid, but as the product of a "connected logic" that "lowers logistical costs, reduces staff requirements and minimizes professional involvement". Ultimately, he writes, such objects "blur the interface between economy and disaster" (Duffield, 2018: 166). Ziadah's (2019: 5) observations on the rise of a "supply-chain humanitarianism", in which logistics "has moved from being a "back room activity" to being central" resonate with Duffield's (2018) analysis. Supply-chain efficiency, privatization and return on donors' investment are now the organizing principles of aid delivery at a global level (Ziadah, 2019).

As logistics is essential to expand our understanding of humanitarian goods, the trajectories of these items through production, shipment and deployment, in turn, shed light on important dimensions of humanitarian logistics. As already discussed, as a calculative rationale and a technological and managerial practice, logistics operates on "the spatial disposition of bodies, information and infrastructures", orientating it towards smooth circulation (Chua, et al, 2018: 622). "Logistics analysts", Bonacich and Wilson (2018: 4) write, "treat the entire supply chain as a single continually flowing system". In doing so, they produce an abstract space that is "equivalent, exchangeable, interchangeable" (Chua et al., 2018; Lefebvre, 2009: 233). Yet this "desire for a trans-scalar smooth world" (Rossiter, 2014: 65) remains unattained, and is deeply troubled. A "counter-logistics" made of multifarious "labour, anticolonial, and antiracist struggles" accompanies the expansion of supply-chains (Chua et al. 2018: 623). Ned Rossiter's (2014) metaphor of the "Logistical Worlds" videogame provides a good entry point to those. Rossiter (2014: 65) shows how the "universal logic of interoperability across software platforms and infrastructural component" that characterizes logistics "is accompanied by any number of contingencies: labour strikes, software glitches, inventory blowouts and traffic gridlock". Disruptive contingencies, Rossiter (2014) concludes, are the nemesis of logistics.

Advancing a similar, if more ethnographically inspired and nuanced, argument, Anna Tsing (2009: 173) prescribes attention to the "tapestries" – of gender, race, class, national belonging etc. – through which supply-chain capitalism becomes lived, embodied social relations. Accounting for the textures of specific niches in globalization, Tsing (2005) introduces the concept of friction to make visible the interstices in which capitalism is in tension with its own alternatives, failures, and contestations. Scott-Smith (2018) has referred to this concept in his discussion of the viscosity and stickiness of a humanitarian product like Plumpy'nut®, which consists of a peanut-butter like hypercaloric paste distributed in special bags. His work focuses on Plumpy'nut®'s capacity to "stick

to human behavior, which prevented certain kind of use, slowed its fluid adaptability, and subtly shaped the way people acted" (Scott-Smith 2018: 10). Here stickiness is a result of standardization, rather than of failure and unpredictability. However, as the Better Shelter case highlights, conceptualizing friction in humanitarian goods and supply chains also requires an understanding of what Tsing (2005: 271) refers to the making of global connections through "fragments", rather than flows. Such fragments question the "dominant stories" of supply-chain globalization, disrupting their "self-fulfilling prophecies" (Tsing 2005: 271). "Fragments need not reduce analysis to simply noticing idiosyncrasy and happenstance", rather, they should "interrupt stories of a unified and successful regime of global self-management" to make room for "more realistic alternatives" (Tsing 2005: 271).

Thinking with and through the connections and frictions of humanitarian design, this essay is informed by a methodology of "following the thing" through a multiplicity of locations, heuristic devices and access strategies, akin to Tsing's notion of ethnographic fragments (Cook, 2004; Tsing, 2005). Rather than as a "discrete" object, I approached the humanitarian good in question as a logistical process, "unravelling and becoming more entangled" as it was being followed (Cook, 2004: 662). Field research started by attending the Core Relief humanitarian design workshop that took place on the island of Lesvos in October 2016, and included visits to the Kara Tepe refugee camp, in Mytilini. At the workshop, I also met members of the design team of Better Shelter, who kindly invited me to visit the company's headquarters in Stockholm, a couple of months later, and agreed to be interviewed. I also carried out unstructured interviews with aid workers, architects, journalists and volunteers, both in remote modality between 2016 and 2019, and during a follow-up visit to Greece in 2018. Interviews and observation are supplemented by the analysis of marketing material and technical briefs produced by the UNHCR, Better Shelter and its main logistical provider, the Polish branch of the Danish-founded multinational DSV Logistics. Finally, in 2016 I visited and analysed two major exhibitions displaying the Better Shelter hut, at the Stockholm's Technology and Architecture and Design (ArkDes) museums.

Flat-packing refugee shelter

In Telefonplan, southern Stockholm, the Better Shelter offices are located near the former headquarters of the Swedish telecommunication multinational Ericsson. All around the building, the borough of Hägeresten, once mostly made of Ericsson's workers housing, is now a seemingly sleepy yet rapidly developing multicultural suburb, hosting organic cafes, independent music clubs and the Swedish University of Arts, Craft and Design, known as Konstfack. Better Shelter's location evokes the inclusion of Swedish humanitarian design into the national transition to the so-called knowledge economy. The company started its activities in 2009, when a small group of designers working at Formens Hus Foundation, in Hällefors, central Sweden, got together to work on a research and development project focusing on the question of temporary housing. Led by Johan Karlsson, who will later become Better Shelter's interim CEO, the group was interested in sustainable design and dematerialization (the use of a minimum amount of building materials), and looking for inspiration from sources as varied as traditional Swedish huts, Central Asian yurts, and the tent form from medieval military history through the modern era. The team also considered historical examples of post-disaster emergency shelter, such as those in use in the aftermaths of the Californian earthquakes of the early 20th century.

Although the social entreprise remains independent – financially and legally – from the corporate entity of IKEA, connections to the group, mediated via its philanthropic foundation, marked the project's logistical development since its earliest phases. In their quest for funding, Karlsson and its colleagues presented their Hällefors temporary housing project to a number of potential sponsors, spanning academia and the corporate world. Eventually, the presence of Lennart Ekmark, a pioneer of IKEA design and one of closest collaborators of the company's founder, Ingvar Kamprad, in the Formens Hus board helped them to secure a partnership with the "philanthropic arm" of the INGKA Foundation, owner of the IKEA Group of companies (interviews with Better Shelter communication manager and designer 1, 8 December 2016[3].) By the time Better Shelter proposed its project, the IKEA Foundation was already engaged in discussions with the UNHCR over a potential collaboration in the field of refugee shelter. The corporate-philanthropy actor thus became the essential connection between the design company and a major international humanitarian organization. As will be shown, the latter was enhancing and expanding its external partnerships in the design and innovation fields, as well as its logistical and procurement operations.

Since its foundation, Better Shelter had operated in a global environment where the offer of emergency shelter ideas, prototypes, and goods was rapidly expanding. The social entreprise had a team of highly skilled designers, some of whom, however, had little to no experience in the humanitarian sector (some were former MTV stage designers, others illustrators). Yet it soon emerged as the winner in a potential emerging market that had seen global architecture stars like Shigeru Ban grappling with the question of global displacement. When Better Shelter – then still named Refugee Housing Unit RHU AB – came about, and despite the critical voices within the organization (interview with former UNHCR officer in Lesvos, 23 February 2017), UNHCR swiftly signed a frame agreement for the production of shelter kits.

> *To make the large-scale production of the RHU possible, on 18 July 2014, the UNHCR Committee on Contracts approved a Waiver of Competitive Bidding for the establishment of a Frame Agreement with Refugee Housing Unit RHU AB for the period December 2014 to June 2016 for the purchase of 30,000 Refugee Housing Units at a cost of $1,150* [per unit]*, exclusive of transport and storage.*
>
> UNCHR SSS-DPSM *Refugee Housing Unit Factsheet*, 2015

Although the association with the company is often problematic for Better Shelter, as a social enterprise, IKEA's solid logistical reputation contributed to this success, as stated in the following interview extracts:

> *They* (IKEA) *have got good connections with suppliers (…) but what´s important is that we have received input from them on the design and the flat-packing etc. But that has been pro bono so IKEA has never made any money, never made any profit from us and it´s often falsely referred to as the IKEA designed house in media very, very often and that just seem to stick.*
>
> Interview with Better Shelter communication manager, 8 December 2016.

Packaging – "flat-packing" – is a "strategically important area" in supply chain performance (Hellström and Nillsoon, 2011: 653). The global expansion of IKEA's product sourcing strategies in the early 2000s was underpinned by the introduction of packaging-related logistical innovations

such as flat-packs, but also stackable loading ledges in recyclable polypropylene plastic, which replaced the traditional wooden pallets. Crucially, the latter allowed "the creativity of (IKEA) product designers and packaging engineers (to be) guided by the product, the logistics processes and the markets" rather than "being constrained by the dimensions of the load carrier", as in earlier logistics (Hellström and Nilsson, 2011: 649). Taken together, these logistical technologies allowed a performance improvement that is at the core of IKEA's business model. Better Shelter capitalized on this logistical reputation by adopting the same model.

> *Since these shelters were expected to be shipped far away, and produced in big volumes, two things that you know IKEA is good at are design and supply chain management, to get things from one place to another very cheaply and efficiently, and also get the prices down on raw material and from suppliers…*
>
> Interview with Better Shelter communication manager, 8 December 2016.

A logistical imaginary aimed at making the product transportable and usable shaped the shelter's prototyping (production of testing samples). The process, as described in the interview extract below, is reminiscent of anthropologist Keith Murphy's (2014:202) characterization of IKEA design and marketing as "prototype(ing) of the possible": rendering objects and spaces yet to be experienced tangible.

> *What we think is part of the success is that the design team was quite quick in making prototypes, that actually make something comprehensible and real, you know, and for people outside the design team… can actually visualize what they have been working on. You know, it is so much about thinking this can actually be something when you see it. (…)*
>
> Interview with Better Shelter communication manager, 8 December 2016

As Le Cavalier (2016: 75) writes, the use of the word "prototype" itself highlights a logistically-informed architecture that "develops its plans without particular sites in mind but with certain performance constraints". Such architecture reduces design into the development of "an interface with an unknown condition" and the "playing out scenarios of transformations for a given situation and its many contingencies" (Le Cavalier, 2016:76). This characterization of prototyping resonates with Martin Danyluk's (2019: 109) recent argument about the "heightened substitutability" of places in contemporary logistical networks, a substitutability that he refers to as the production of "fungible space".

Besides the IKEA Foundation, the Better Shelter's prototyping included feedback from a network of partners, ranging from suppliers of raw materials to the UNHCR itself. Particularly during the early phases, suppliers were fundamental. Back then, the social entreprise was still short of financial and technical resources, and thus entirely "in the hand of others" (interview with Better Shelter designer 1, 8 December 2019). Materials and structures were tested directly in the partners' factories. The UNHCR also shaped the product's design through its own expertise in the development and usage of relief items, such as those included in its core relief items catalogue (UNHCR 2017). These encompass the traditional family tent, developed in partnership with the International Committee of the Red Cross (ICRC) and MSF, and the more recent Sunbell solar lamp, produced by the Norwegian renewable energy technology company BRIGHT and distributed in 2,4 million units between 2014 and 2018. In recent years, supply and procurement, coordinated by

the Division of Emergency Response, Security and Supply (DESS) and advertised on the agency's website under the appealing title of "doing business", have become increasingly important UNHCR activities. Between 2011 and 2015, the agency's procurement volume increased by an average of 20% per year, going from 389 million USD in 2011 to 951 million in 2015 (Blecken, 2016). In case of Better Shelter, UNHCR did not simply manage "a purely "arm's length" transaction to procure a commercially-available shelter solution" (UNHCR, 2015:1). To the contrary, it the agency followed closely the product's development.

The first element to be designed, produced and tested was the metal frame. The designers' initial idea was to provide clients with a kit including only this "bare" structure in lightweight galvanized steel. This would have allowed end users to complete the shelter locally, adapting it to specific climatic, environmental and cultural conditions. However, mindful of the unsatisfactory emergency shelter response after the Haiti earthquake, which was marked by significant delays in local procurement operations (Rees-Gildea and Moles, 2011), UNHCR expressed preference for a complete shelter kit, to be shipped in a maximum of two flat-pack boxes (Interview with Better Shelter designer, 8 December 2016). This request pushed Better Shelter to undertake the research work that would lead to the choice of polyolefin foam panels treated with UV protection for the walls and roof, and other UV-stabilized polymeric plastic for the smaller components. The dynamism at work between UNHCR and the company highlights the complex relation between humanitarian and commercial logistics. Business literature tends to discuss humanitarian logistics in terms of "lessons learned" from commercial supply chain management (McLachlin and Larson, 2011; see also Ziadah, 2019). However, the logistical exchange that led to the development of the Better Shelter was far from unidirectional (Joachim and Schneiker, 2018).

A third, less visible but crucial commercial logistical actor was still to enter the process. DSV Global Transport and Logistics, the Danish-founded multinational, was chosen to package and ship the Better Shelter from their warehouses in the port city of Gdańsk, in Poland. Strategic labour delocalization through the choice of DSV Solution Poland allowed to keep production costs low - a logistical rationale that is as essential in the global market for humanitarian goods as it is to for-profit industries (Interview with Better Shelter designer 2, 13 December 2016). Active since the late 1970s, at the time of writing DSV was present in 80 countries, benefiting from a network of around 200,000 partners and suppliers. Its structure is articulated in three divisions: air and sea, road and solutions. The last one focuses on providing clients with logistical models that "add(ing) value by increasing operation and cost efficiency"[4]. As one of the world-leading logistics providers that have opted for the so called "standalone optimization" management model, DSV was a particularly suitable option for the project. Based on a decentralized structure of separately-managed business units, each dedicated to a specific client and activity, the model "best serves small to midsize customers, providing them with flexible, custom-made solutions" (Rousseau et al. 2012: 4). Better Shelter staff effectively describes this complex prototyping, production and shipping process, involving a variety of actors, as "a network".

> *Something that I think is important to add is that it (the shelter's prototyping process) has always relied on the expertise of others, and treating it as a network. I mean UNHCR has come with a lot of expertise on how it actually works and what people actually request and what works, and then the designers, and then the IKEA foundation that knows how to run these projects and how to make things happen*

> *and to put people together, so yeah… and the suppliers are an important part of that.*
>
> Interview with Better Shelter communication manager, 8 December 2018.

The next section turns to the entanglements and frictions that mark this network once the product reaches its end users.

Friction in supply-chain humanitarianism

In Stockholm, in early winter 2016, a few weeks before being awarded the prestigious Beazley prize, the Better Shelter featured in the exhibition *Housing Now, Then*, at the Stockholm ArkDes museum, as one of the most significant recent achievements in Swedish social housing. The shelter crowned a proud display of housing policies that encompassed the subsidized loans and rent control measures of the immediate aftermaths of World War II and the social-democrats' generous public building policies during the 1960s baby-boom. It was, so the narrative went, a groundbreaking innovation in the kingdom's historical efforts to provide "housing for all". Mobile, global and developed under the social responsibility auspices of the country's most iconic corporate brand, IKEA, it was Sweden's essential contribution to the refugee question in a post-welfare era. The exhibition offered an overview of the political history of Swedish design: from the fixed-grid infrastructures of social housing, to the logistical virtues of a temporary shelter whose mobility can accompany and modulate contemporary emergencies. Standing inside its foamed plastic walls in the museum's exhibition hall, the shelter appeared smart, well lit, flexible and warm.

In early October 2016, a couple of months before the exhibition and seven months after the EU-Turkey agreement on refugees had entered into force, blocking the movement of migrants to and from Greece, the Aegean island of Lesvos looked deceptively calm. As the number of arrivals had decreased, volunteers, journalists, researchers and philanthropists were flying out of Greece, spontaneous solidarity initiatives were turning into established, orderly NGOs, and "transit" camps were becoming something else. Kara Tepe, managed by a former Greek army general on behalf of the Municipality of Lesvos, was now formally a "hospitality centre". Held as a model for good practices in the rather derelict Greek refugee camp sector, the Kara Tepe "village", as the municipality of Lesvos referred to it, was then almost entirely made of Better Shelters. The Scandinavian home-like aesthetics of the small huts, so different from that of the UNHCR tents and fiberglass containers, reinforced the "village" narrative. Deployed at the height of the "crisis", in 2015, when the number of arrivals to the island was significant and Kara Tepe was still managed by the UNHCR, the Better Shelter seemed to have survived the refugee crisis's geopolitical turmoil, transitioning from an emergency transit shelter to durable housing for an enduring containment facility. In humanitarian parlance, it had become "a post-emergency and transitional shelter"[5].

For Scott Smith (2018), 'friction' is the quality that allows humanitarian goods to perform their function by sticking to pre-designed patterns, forcing human agents to adapt to them, and thus shaping behaviours. In Kara Tepe, Better Shelter seemed to rely on a similar capacity to mobilize and contain human behaviour. In line with IKEA logistics, the product had transferred the assembly phase to the Greek field site, where the shelters had been set up in approximately half a day by a team of trained local workers. By providing users with a lockable door, the shelter located security

at the household level, encouraging a form of private behaviour that contributed to the orderly image of the camp. The shelter's logistical properties had thus become tools for camp management and camp discipline. In Kara Tepe, unwanted mobilities were made slightly less precarious by accommodating them in "slightly better" shelters (Scott-Smith, 2017). Offering a product with optimized life span, refugee shelter logistics helped to "flexibly maintain(ing)", rather than overcome, "vulnerable and subaltern spaces" (Joronen, forthcoming). Attenuated precarity through transportable "better shelters" came at the cost of longer-lasting precarity, however edulcorated by Swedish design aesthetics (for a discussion of the relation between refugee shelter technologies and camp discipline, see Dalal et al., 2018 and Gueguen-Teil and Katz, 2018). Syrian writer Yassin al Haj Saleh (2018) has eloquently described such experiences of protracted precarity in tents, hangars and camps as one of "literally" inhabiting "the temporary".

Yet this logistical transfer of assembly operations came with disruptions and friction. In contrast to the airy, well-lit, and neat prototypes that I had repeatedly, effortlessly entered at the Stockholm exhibition, in Lesvos the shelter appeared as a patchwork of precarious infrastructural add-ons brought about by field humanitarians, and the refugee themselves. When the participants of the design workshop I attended arrived to the camp's main square, in 2016, not far from the containers hosting the outreach offices of major NGOs, a few families and children were enjoying the October sun sitting and chatting outside of their IKEA-sponsored huts. In the warm weather, the much-advertised lockable doors of the Better Shelter were not only unlocked, but left wide open to make up for the insufficient ventilation, while fabric cloths hanged by the door jambs protected the privacy of the home spaces. As evidenced by the problem statement they circulated among the participants on the first day of the workshop, Better Shelter was already working on these problems, which they would address in the subsequent versions of the product.

> *Ventilation is today achieved by an opening in each of the top gables and by 4 windows. While this is nowhere near enough in the hottest periods, it is what we have specified from European building standards being the acceptable minimum. We aim to address this in the next release, but until then and for those living in our first generation homes, there is a need for improved airflow during hot days.*
>
> Better Shelter Problem Statement, Core Relief Workshop, Mytilini, Greece, 7 October 2016.

The four windows mentioned above were located on the higher part of the plastic panels. As a consequence, people used to spend time sitting on carpets on the floor, because of lack of furniture or just out of habit, had in some cases pierced holes in the lower parts of the panels, hoping to get some extra air and light (interview with Greek volunteer in Kara Tepe, 6 October 2016). In addition to that, some of the smaller NGOs operating in the camp had helped the refugee families to build makeshift "garden furniture" around the shelters, like benches, tables, and shading panels. The main NGO partner for the camp's infrastructural operations, the US-founded Samaritan's Purse International Disaster Relief, was instead busy making preparations for the eternal threat menacing Greek refugee camps: the cold and moisty Mediterranean winter. Before that, they had helped to build some kind of flooring, which the Better Shelter kits did not provide.

While hardly surprising in the early phases of the implementation of a new product, these additions, changes and failures highlight the frictions of supply-chain humanitarianism, in a striking

materialization of the fragmented global connections theorized by Tsing (2005). The "fragments" modified, reused or taken away by shelter inhabitants reveal humanitarian logistics as a project made unstable by its close entanglements with global processes of accumulation and bordering. This instability was most evident in the ways in which the Better Shelter intersected with the shifting geopolitics of migration and mobility in the Aegean region and wider Europe. In the early phases of the camp set-up, in 2015, Kara Tepe was hosting people who stopped only for a few days before continuing their journeys to mainland Greece, whose northern borders could then still be crossed (Wain, 2017). Living provisionally in a plastic shelter, refugee families had often taken some of the structure's component with them when leaving the camp – parts of the metal frames, screws, or pieces of the plastic panels. The lamp and the attached photovoltaic panel, the latter including a USB port that could be used to recharge mobile devices, were frequently taken away to be used during the journeys, or sold for cash (Interview with former UNHCR officer, 23 February 2017). Rapid changes in camp and border geopolitics also pushed the Kara Tepe management to introduce some logistical adjustments to the shelter's deployment. As John S Wain (2017: 20), UNHCR Senior Emergency Shelter Officer, remarked "it became necessary to develop detailed care and maintenance check lists, enhance design modifications and create a comprehensive spare parts package to keep the RHU units functioning and in good order." The following passage shows the company's awareness of the multidimensional logistical setting in which they intervened.

> *The Kara Tepe camp is a transit camp and as such is more susceptible to things being carried away. While we are very understanding for the fact that people on the run into an uncertain future might grab what they can, it poses problems to the camp managers. In what way can we make it a better option to leave things as they are when you leave the camp? Or, how can we in a good way provide people with the necessities for travel when they leave the house?*
>
> Better Shelter Problem Statement, Core Relief Workshop, Mytilini, Greece, 7 October 2016.

These and other interventions, aimed at preserving the shelter's functionality and circulation in changing environments, highlight the capacity of logistical humanitarian design to incorporate and adjust to friction. Caught between the "fungible space" (Danyluk, 2019) of prototyping rationales and its need to negotiate localized material relations, supply-chain humanitarianism follows capitalist logistical abstractions in their endless quest to survive "turbulence and upheaval" (Danyluk, 2019: 110).

On the last day of the Kara Tepe design workshop, as these logistical adjustments were studied and tried out, the camp was buzzing with new humanitarian logistics and marketing operations. Architects, NGO workers, designers, and sales manager for major UNHCR suppliers like Alpinter were present. It was a gathering of transnationally hypermobile professionals tasked with diagnosing problems and finding solutions to improve the shelters of immobilized people – a classic example of the uneven mobilities that characterize the logistics of humanitarian aid (Sheller, 2013). For some of the participants, particularly for the sale managers, the purpose of the trip was exploring Lesvos as a potential market, in case of future demise of the shelters. Indeed the structures were "becoming obsolete" and would have "soon to be taken down", to be recycled or repurposed (Core Relief workshop participant, 6 October 2016). A few months after the workshop, the early version of the Better Shelter in use in Kara Tepe was indeed taken down, and replaced with containers. Among the reasons cited were "fire concerns", and just general

deterioration (Pascucci et al., 2018). Some of the structures were being recycled as "innovation labs" offering technological and entrepreneurship training to refugees, volunteers and aspiring aid professionals. Even in its afterlife, the Better Shelter continued to occupy a central role in Lesvos' emerging landscape of supply-chain humanitarianism.

Conclusions

Four years after its dismantlement in Kara Tepe, the Better Shelter continues to circulate globally, adapt, and cause controversy. We find it being re-deployed from North African refugee camps to the Brazilian military and UNHCR joint "Operação Acolhida" (Operation Shelter), launched in 2018 to provide relief to displaced Venezuelans. In the tropical climate of the state of Roraima, northern Brazil, many of its ventilation problems resurfaced, apparently unresolved (Moulin and Magalhães, 2020). Starting from April 2020, UNCHR has been using the shelter also "as isolation rooms for confirmed and suspected cases of COVID-19", in refugee settlements in Brazil, Colombia, Niger and Jordan[6]. As this article has argued, the resilience of this cleverly "branded", flat-packed shelter in metal and plastic offers empirical insights on the role logistics plays in the spatial entanglements of capitalist accumulation and the "management of life and death across multiple temporalities, spaces and scales" (Attewell, 2018: 734).

The analysis of the shelter's trajectory in Aegean Greece has shown how easy-to-deploy, relatively long-lasting temporary housing kits contribute to refugee camp management. The shelter kit acts as a catalyzer for what Duffield (2011: 765) calls "the restriction of bad circulation" in the "*nomos* of the camp" and the need for "maintaining good circulation" in a "fragmented" world, highlighting the pervasive banality – and thus the power – of its material interrelation. In this regard, the different forms of mobility that developed around the shelter – the globetrotting sales manager flying in via Dubai, the flatpacks shipped via Gdańsk , the refugee kept "waiting" for months in a hut, on an island – are central of the spatial politics of supply-chain humanitarianism (Sheller, 2013). The relation between humanitarian logistics and infrastructures and spatialized biopolitical control deserves further investigation (see Moulin and Magalhães, 2020).

As a logistical tool, the Better Shelter is the product of complex processes marked by heterogeneous connections and disconnections. The components taken away or recycled by the refugees in Kara Tepe, and the logistical adjustments introduced by aid agencies, prompted by the shifting border governance in the Aegean region, are all examples of this. These frictions reveal a fundamental tension in humanitarian goods, namely the one between standardization and modularity and adaptability. As it attempts to produce and govern interchangeable, fungible spaces (Danyluk, 2019) in which shelter kits can circulate and be fastly deployed wherever disasters and displacement occur, humanitarianism reproduces capitalism's spatial abstractions, and their inevitable crises and transformations.

In a landscape in which humanitarian logistics merges with border enforcement, it is also important to remain attentive to these frictions as potential materialities of political agency. A form of subversion, it can be argued, is at work when IKEA-inspired, humanitarian lamps shipped in flat-packs from a Gdańsk warehouse are used to cross borders at nights, by people whose right to move has been violently denied. Yet this glimpse of subversion facilitates a mobility that remains determined by utterly unequal and highly precarious infrastructures and geographies. The fluidity and adaptability of humanitarian goods is essential to the reproduction of spaces of

humanitarian government (Scott-Smith, 2018). In humanitarian logistics, friction does not necessarily amount to resistance (Tsing, 2005), nor does it warrant any easy counter-logistical optimism.

As we continue to ponder these questions, some may argue, we should appreciate efforts to keep people sheltered, and avoid indulging in excessive cynicism. The motivations and ethical commitments of the designers I met conducting research for this paper interrogated me and made me pause as a critical researcher. "If someone is going to walk through bloody Europe and being chased by guards at every border", one of them remarked referring to the refugees taking away the photovoltaic lamps provided with the shelters, "then please have the lamp, you are going to need it" (interview with Better Shelter designer 1, 8 December 2016). In many of the interviews, a tension clearly emerged between individual ethical and political beliefs, the IKEA production model and the product's use in containment facilities for migrants. Besides such personal struggles, the shelter's aesthetics and "branding" give it a reassuring allure. At the design exhibitions I visited, its openly displayed "Swedishness" reminded viewers of the reliability of a global humanitarian superpower. The shelter's association with IKEA makes its logistics look "cosy" and harmless. Mobilizing the domestic affects of "kitting" and do-it-yourself logistics (Garvey, 2017), it soothes the moral panic associated with the so-called "European refugee crisis" by offering a purportedly intimate, 'homey' and domesticated remedy to it. IKEA flat-packs mediate "between proximity and distance" in humanitarian crises that are now striking very close to home for Western consumer-citizens (Richey and Ponte, 2014: 9; see also: Richey and Ponte, 2011; Pallister-Wilkins, 2018). Logistics binds humanitarianism to accumulation processes and the politics of neoliberal consumer-citizenship through abstract rationales, materialities, infrastructures, affects and desires. Flat-packs, with their irresistible triviality, are now something our bedrooms and living rooms have in common with refugee camps. This calls for an expansion of the conceptual tools with which we approach the geographies of supply-chain humanitarianism.

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