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Time-travelling the time-travel in(to) heat. Thoughts and speculations about thermic futures in urban spaces

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ABSTRACT: *This paper is an exploration into future imaginaries of heat. In May 2022, Elisabeth and Jorge, the authors of the paper, met Juli, a heat researcher, who invited them into a time travel to a future world where and when heat is at the core of public life. In their imaginary journey they travel across three different loops, each of them increasingly hotter. In their travel they encounter multiple knowledges and technologies that future citizens of the world have invented and developed to cope with and mitigate heat, and they somehow experience them.*

KEYWORDS: *Heat, waves, cooling infrastructures, future imaginaries, climate change*

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Introduction

The authors of this paper, architect Jorge based in Madrid and anthropologist Elisabeth based in Berlin, are working in the context of the ERC-project Urban Vibrations: *How physical waves come to matter in Contemporary Urbanism (WAVEMATTERS)* on the questions of how heat, seen as a thermic energy propagating in waves, matters in everyday lives of human and nonhuman bodies and in urban planning.[1] On a nice and sunny day in May 2022, they leave their office in the middle of Berlin towards Neukölln district to meet another 'heat researcher', the researcher, designer, and artist Juli Sikorska[2], who will take them on an imaginary time-travel to a future Berlin where heat has changed the configuration of the city.

Based on the afternoon the three of them spent together, this paper takes the reading person on a thermodynamic time-travel starting on this spring day in May 2022 in Berlin, and traveling into reflections, imaginations, and speculations about urban heat futures in and between Berlin and Madrid. This paper and the process of assembling stories about different heat scenarios and heat futures onto paper oscillate between various layers of the present, past, and future of heat in cities.

Although rather hot for a middle-European spring season, the weather in Berlin in May 2022 still felt as sunny and warm. The heat scenarios that were anticipated on this time travel speculated about events and practices that partly became real just a couple of weeks later in the seasonal heat waves during which this paper was written: areas of India and

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Pakistan were hit by heat up to 45 degrees since the beginning of April 2022 (Verma 2022). Most of the Mediterranean, especially affected Northern Africa and Southwestern Europe, began to suffer from heat also up to 45 degrees during June 2022 (Pratt 2022). After some atmospheric relief, in July and August, a strong heat wave again affected most of southern and this time also middle European countries, as well as the British Island, where a local new heat peak of around 40 degrees was measured in Coningsby in the middle of July (Mathis 2022). In the weeks of finalizing this paper, in the mid of August 2022, Berlin is burning under around 35 degrees Celsius (BerlinOnline 2022), most areas of Spain and France are suffering from their worst drought ever since recording (Torres Benayas and Zafra 2022; AEMET 2022), and in and around the Iranian city of Abadan temperatures are reaching new peaks of more than 52 degrees as hottest temperature measured in the still ongoing 2022 (Lee 2022; Iran International 2022).

So, what the authors propose here is a three-fold time-travel, that takes a certain spot in Berlin Neukölln as a point of departure. First, we travel together with Juli Sikorska into the year 2039, remembering together the year 2029, when a terrible heat wave hit Berlin. And then, we will imagine how that same imaginary time-travel would have happened under hotter and extremer real weather conditions; that is, we try to imagine what the experiences would have been in the conditions we have been imagining one step earlier.

Time-traveling between a mild presence and hot, hotter, and 'extreme' futures

It is 2:15 pm, on a very nice day in the middle of May, when we, Jorge and Elisabeth, arrive at a small pizzeria near a park in Berlin Neukölln. We wait Juli sitting at one of the tables outside. When Juli gets to the table, we order some slices of pizza and some beverages. What brings Juli and us together in Berlin on this spring day is our mutual interest in heat in cities. Juli developed together with other designers and researchers the speculative and artistic project "urban heat island living" that invents, starting from an imaginative heat wave in 2029 in Berlin, future scenarios of how global warming will affect cities, how heat waves will become more frequent and more intense, and how cities will intensify as urban heat islands. In the context of this artistic future-speculative project, Juli invented several scenarios for how things would happen in a — not so speculative but still not so present in middle European heads — hotter future. As a fictive heat adaptation designer, Juli guides time travels into future heat scenarios as thought-provoking events, and invites us, we decide to stay in the roles of architect and anthropologist, onto one of these time-travels into urban heat futures.[3]

After lunch, the three heat-researchers now try to zoom themselves into the year 2039 to reflect back on the year 2029, when a deadly heat wave devastated Europe and particularly hit Berlin.

Juli hands us a pamphlet showing pictures of a cooling tent and some descriptions of its use. The imaginary cooling tent and the imaginary practices with it form one of the speculative future heat scenarios, made up and imagined at a spot not far from the Pizzeria. Jorge's phone reads the QR-code in one corner of the pamphlet. It links to a map that will lead us to the spot, just a short walk away from where we are. We walk in the sun; it feels lovely and sunny at the beginning. It feels like the sun gives us energy and lights up our mood. However, after a few minutes the sun already feels more as an uncomfortable burning — remembering that almost 30 degrees Celsius at the beginning of May is considered as "too hot for this season". Jumping into the time-travel ship, riding into the future and

Fig. 1. Picture of the pamphlet, made after the time-travel.

thinking back on a heavy heat wave that will have hit Berlin in 2029 feels really likely, it feels like that could happen maybe even sooner.

A couple of minutes later we ended up standing at the top of a staircase leading downwards to a park. Juli starts the time-travel for us:

> "Welcome to our tour through Neukölln. My name is Juli, I am a heat adaptation designer working with the Urban Heat Studio here in Berlin. My job is to look at how the city experiences heat, how it adapts to heat through all its inhabitants: people, nonhumans, that could be little animals, trees, fungi, microbes, but it could also be other nonhuman companions like public infrastructure, like benches, like shading. On our little walk, I will show you the transformation that we have witnessed here in Berlin, and I am curious about your own observations that you have made over the last ten years, maybe you were here, maybe you weren't, but maybe you also heard some stuff on the news. I will not only ask you about your professional memories, but also about your personal ones, because the transformations we have witnessed are very personal ones, they have changed the way that we lived, that we worked, that we gathered with other people."[4]

Time-Traveling-Loop 1: Mild

... written inspired by temperatures of around 25 degrees Celsius in Berlin and around 28 degrees Celsius in Madrid end of May 2022 ...

The picture on the pamphlet shows a former pop-up cooling tent, one of those that were set up during the big heat wave in Berlin in 2029. Juli reminds us:

> "This pop-up cooling tent was actually the first that was put up in Berlin as a very fast way to cool down people, to create a little bit of shading and cooling on this very hot parking lot here."

But now, in the present of 2022 we are in a park, with lots of shade from trees; it feels sunny and warm, nice, and lightning up the mood, but it does not feel hot at all, and it is difficult to merge into what she says. We keep trying... Juli continues...

> "It was around that time when we experienced days of up to 46 degrees heat for three weeks straight. More than that, we had all together a really intense period of heat for five months during that year in Berlin and basically, we were not prepared for it. It caught us all by surprise. Schools closed for weeks and parents, again, just didn't know what to do with their kids. The subway was empty because it was too hot to wait in the platform. We had a lot of power outages. People got hospitalized. Some people died. After some time, we saw real estate prices starting to change; so if you were in a much cooler area in town, it would be much more expensive. On the contrary, in other areas of the city, and due to the urban heat island effect, the situation worsened, and the urban areas deprived. And especially, certain areas would have a lot more people who were elderly or people with pre-existing conditions. There were certain islands where they would really need a lot more help cooling down, since also private apartments of many people were not adapted to such extreme heat. But at the same time, that year also became a turning point for us in Berlin in terms of heat and climate adaptation. We also witnessed a starting approach to resilience in a city. A new heat response agency, the "Hitze Hilfswerk" has been formed. They started putting up cooling tents in parks and also proper cooling centres that would transform from former office buildings, malls, fitness centres, etc... And so, people would come to those cooling centres and spend any time between a few hours and maybe a few days or even stay over a week, depending on how the situation was at home. That was really the first kind of steppingstone for Berlin to start developing a better resilience agenda."

Jorge and Elisabeth are trying to see an actual pop-up cooling tent in front of them, try to zoom themselves into the future of 2039, ten years after this tent has been set up, and imagine looking back into 2029. Elisabeth remembers that these first arrangements of pop-up cooling tents in her neighbourhood in Berlin's district of Prenzlauer Berg were presented as a great help to cope with the heat in urban spaces but turned out to be not enough in amount and too small in their size, so the tents soon became crowded. People were sitting, laying, and standing very close to each other — so close that the cooling system of the tents actually failed, and the tents became heated-up spots as well. And conflicts over the contested cooling tents intensified when people wanted to also bring their pets, their dogs, cats, and rodents into the cooling tents.

Juli, the heat adaptation designer, helps the fictive memory:

> "The solution for that was in effect to add water moisturizers in the surroundings that also cooled you down. Your skin gets to cool down. We also had those cooling stations where you could cool your wrists and the neck, and that also helped you a lot to cool down. So, we had stations like that. We even had like this fountain that's

still there and well, there's a lot more fountains now. Luckily, as you see them everywhere."

The Heat Wave in 2029 not only hit Berlin. Seen from the Berlin point of view it was *coming* from the Mediterranean, spread over Western and Eastern areas of southern Europe before it crawled up to middle and northern Europe. This heat wave of 2029, a special event back in those days, nowadays just a seasonally repeating rhythm, affected Madrid a few weeks earlier than Berlin. Jorge remembers that one evening he came home and found all the plants on his balcony in the centre of Madrid, vegetables, and almond and lemon trees, dried out to death. He had watered them in the morning, although it was critically discussed to give water to plants. But when he came back after a few hours, he found them as brown skeletons. That was also the time, when the surfaces of Madrid and the sky above it, the air in it, were for the first time almost completely covered and floated by sepia-coloured fog, made from dust of dead plants, sand from dried-out grounds that becomes moved through wind — wind that was also a highly welcomed breeze of refreshment, but not when it circulates as a wave of sticky sepia-coloured dust.

Time-Traveling-Loop 2: Hot

... written inspired by 38 degrees Celsius at the beginning of July in Madrid experienced during the EASST conference...

May 2030, in Berlin Neukölln. It is the first spring after the summer of 2029, when a terrible heat wave hit the city of Berlin completely unprepared. In the years before that, the city has had experienced temperatures up to 38 degrees Celsius. But in the hot season of 2029, Berlin experienced temperatures up to 46 degrees for several weeks in a row.

While heat in the urban space of Berlin was until 2029 more considered as an inevitable effect of global warming, since the last season, the city has followed the examples of Miami and Phoenix in the US and Athens in Greece of implementing offices, experts, and infrastructures to increase the heat or climate resilience of the city.

We, Jorge and Elisabeth, an architect and anthropologist researching how heat matters in urban everyday lives and urban planning, and especially what has changed since 2029 in the context of a project that has been going on since 2022, should have ended in 2026, but was prolonged because of its high relevance, are about to meet Juli, one of Berlin's newly nominated heat adaptation designers to reflect together upon the last summer and the urban heat futures ahead.

We are standing with Juli at the top of a staircase, leading down to a spot that once was a green corner of the city, a park with a lawn surrounded by trees, but which is since last summer just a dusty desert-like field, framed by skeletons of trees. This corner of the city has become famous, it is the spot where a year ago the first pop-up-cooling tent in Berlin was set up. About half of this brown desert is now covered with a huge, huge cooling tent. The tent is supposed to be white, its original purpose was being a party tent, but its surface is now covered by sepia-brownish dust, as is the rest of the city around us and that is circulating around the city as a wave of visible sandy particles. The dusty-sandy wave is a mesh of sand from deserts in the north of Africa, dry earth, smog, and pollen. It is the first year, that the sepia-sand-wave is circulating up to areas north of the Pyrenees, it moved with the first seasonal heat wave with temperatures up to 40 degrees Celsius in the southwest of

Europe at the beginning of April up to France and Germany. Standing at this corner, it is May, having already 35 degrees Celsius for the second week in a row at only the beginning of the season, we are looking ahead to three to four months of 45-50 degrees, as it is predicted again for Berlin for the summer of 2030. While thinking and speaking about strategies for cities to become more heat resilient, Elisabeth starts coughing and needs to take a pump from a corticoid inhaler. The heat, drought, and dust make the air almost unbreathable and causes severe problems for bodies with respiratory issues, such as asthma. After standing only a couple of minutes at this corner, Jorge starts to complain that he is sweating, sweat is running along his face, rinsing the sepia-brownish dust into his eyes, he also notices that his uncovered head is burning, and he curses the second he took his cap of in the subway and then forgot it there. He notices a heavy feeling inside his chest and asks if we could try to find a spot inside the cooling tent.

Time-Traveling Loop 3: Extreme

... written inspired by new temperature records in the first half of august 2022 of for example 41,5 degrees for France, measured in Navarrenx, 44.5 degrees in Formentera as the highest temperature ever measured in the Balearic Islands, and 53 degrees Celsius, measured in Abadan as the globally highest temperatures of 2022 ...

Remember: Juli invited us to travel with her into the year of 2039 and to look back from there into 2029, the year in which an — in those days — still unique heat wave hit Berlin. While standing in our thoughts on the spot in Berlin Neukölln where Juli started this travel for us by reflecting upon heat pasts and imagining heat futures, Jorge and Elisabeth try again — in the middle of august 2022 — to time travel a bit further, into the year 2039 again:

Imagined with a focus on Berlin and Europe, that heat wave — in those days of 2029 surprisingly unique with temperatures around 45 degrees for weeks in a row — has repeated itself every year since then. Starting from late March on in the Mediterranean, heat crawls as an atmosphere its way towards the North sticking up air and enveloping bodies. In 2039, standing at the spot in Berlin Neukölln, Elisabeth is wearing a protection mask, that covers her mouth and nose, and protects her body from breathing in the sepia-brownish dust. It became recommended and common in the past years, for bodies with respiratory issues and in general elderly people and kids, to wear such protection masks. Jorge has forgotten his cap in the subway but came prepared with another one for emergencies like this. Although wearing a cap, he feels the burning sun radiation on his head, sweat runs down his body, he notices a dense and heavy feeling in his chest, and asks if we can go into the cooling tent. Walking down the stairs and towards the end of the long line of humans and pet animals to get access into the tent, Jorge and Elisabeth admire Juli, who showed up the most prepared to our meeting, and seems to deal the best with the hot and sticky atmosphere: she is waving and ventilating air around her with a fen, it is not easy to move this fen through the sticky atmosphere, she says, but it would still give her some relief. The best relief however she would feel through the combination of spraying her face first with water and then ventilating some air with the fen. She always carries a little spray bottle with her, which she refills on one of the public water dispensers which are positioned in the city. It seems that in the almost 10 years of experience as a heat adaptation designer working for more heat resilience of cities, she has also learned to design heat adaptation

practices for her body. Until two years ago, there would still have been fountains, in which you could walk in, and that would sprinkle you while you pass by. The fountains are still here, but they don't sprinkle water anymore. At the beginning of his season, it became also forbidden to use personal sprinkling devices, such as Juli does, or to refill them at the public water dispensers. Juli hides hers in her bag when we reach the end of the waiting line. Jorge really does not look good; as a man in his fifties, he already counts to a group with higher vulnerability to heat than others, so we can enter through the fast emergency line. Passing the door, each of us gets one bottle of water, unfortunately they are short in water today, so we are warned that this might be the only one, and a dedicated slot of staying inside the tent for 30min. We sit down on small, simple chairs and try to go back to our conversation. We are discussing that what we feel here as 'extreme', is still quite mild and bearable compared to temperatures in for example the Mediterranean, of almost 60 degrees, in some Iranian cities of 65 degrees, and in Delhi of almost 70 degrees, and that we are aware of the privilege and also the controversies of cooling infrastructures and our access to it. Suddenly a loud bang, the light goes off — a breakdown of the electricity, as it is happening almost daily. While in the dark, we immediately feel how the cooling tent with more than hundred human and nonhuman bodies in it slowly starts to warm up. The atmosphere turns from hot and sticky to apocalyptic. What? Did we hear someone saying that the doors don't open?

Notes

1 For more information see the website of the WAVEMATTERS-project: https://www2.hu-berlin.de/stadtlabor/project/urban-vibrations/.
2 Juli describes herself on her website as a "researcher and designer translating the uncertainty of climate change into tangible experiences": https://cargocollective.com/julisikorska.
3 https://cargocollective.com/julisikorska/URBAN-HEAT-ISLAND-LIVING
4 Ethnographically speaking, we conducted this speculative time-travel as a sensory go-along and hence as a form of a moving interview. Text passages between quotes are quotes from this interview said by Juli, who also agreed to be mentioned with her name in this text.

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Figure

Fig. 1. Elisabeth Luggauer: Picture of the pamphlet, made after the time-travel, May 2022.