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What can adaptation to climate-related hazards tell us about the politics of time making? Exploring durations and temporal disjunctures through the 2013 London heat wave

Abstract:

Temporalities seem to have made a comeback as an object of geographical enquiries. Drawing on a set of in-depth interviews conducted with elderly residents of London during the heat wave of 2013, this paper explores temporal awareness through the concept of duration and its wider relevance to the geography of risk and the social studies of disasters. It argues that the overwhelming attention given to the logics of speed and urgency that underpin adaptation to climate change has restricted the capacity for geographers interested in risk and disasters to recognise distinct temporal perspectives and logics of action situated outside the open futures promoted by the concept of adaptation. The paper concludes by emphasising that a better understanding of what temporal durations entail could also help to find different ways to understand and experience the inherent movements and changes that are intrinsic to time and to life more generally.

1 Introduction

In his sociological account of the deadly 1995 Chicago heat wave, Eric Klinenberg (1999: 242) defines environmental hazards as "revealers of social conditions", providing us with an opportunity to see the underlying political processes involved in framing these events as biophysical. Building on Klinenberg's work, Richard Keller's (2015) recent inquiry into the reasons that transformed the 2003 heat wave into a devastating political and social crisis in France, more specifically in Paris, has shown how a different valuation of life in French society preconditioned certain categories of citizens (e.g. the poor, the elderly, the homeless) to fall victim to the heat. With the exception of some yellow grass patches, the 2013 London heat wave has left few traces and can hardly be compared with the heat waves in Chicago and Paris. Nonetheless, its institutional politics is no less interesting than those more spectacular cases. This is because the 2013 London heat wave occurred in an era of scientific consensus on catastrophic climate change: a stretch of human history in which future-oriented anticipatory governance has become key to the organisation of human and non-human relations through concepts such as adaptation to climate change. Thus, exploring the management and experience of the 2013 London heat wave offers a lens through which we can investigate the tensions between the discourse and practices of climate change adaptation and everyday experiences of so-called hazards such as the heat, but more importantly for this paper, this new focus on heat waves provides a way to highlight the temporal tensions at the heart of hazards management. This temporal interest leads the paper to argue that the 2013 London heat wave was more than a hot air mass that put the life of the elderly at risk. It was also a heuristic capable of capturing the wider politics of time making (the differentiated production, embodiment and mobilisation of movement) that animates and contests the accelerated dynamics of climate change adaptation discourse and practices. Exploring the politics of time involves opening up the production of various temporal modalities and durations that shape time awareness and that allow temporal experiences to be recognised ontologically.

Before going further in exploring the politics of time making, central concepts allowing us to identify how its formation occurs need to be unpacked. For the sake of clarity, this paper conceptualises time as pure change and differences (see Deleuze 1968), and draws on the work of Henri Bergson (1927, 1939) to define and understand durations. For Bergson, durations (although he uses the singular as *la durée* in French) become the ultimate experience of time. Thus, durations (i.e. the multiple experiences of *la durée*) do not only refer here to the contractions or extensions of intersubjective time; they also refer to the phenomenological expressions of time that make some events survive in the flow of the now and hence they acquire a certain singularity in the movement of life more generally (Bergson 1939, see also Whitehead 1964, 1967). They are dynamic and should be seen as "change, [as] a passage or [as] a becoming" that are constantly actualising the now, but that are also multiple, heterogeneous and successive (see Deleuze 1966: 29- 40). What becomes interesting with Bergson's take on duration is the fusion of the past and the present together, making the present the most contracted level of the past and leaving the future to a state of actualisation of the extended past that is seen as being in perpetual movement (Bergson 1927, Deleuze 1966). This conceptualisation of durations connects the paper with what Alfred North Whitehead (1967: 187-188) has defined as the *percipient event*, which is similar to what Bergson calls the *actual* – a reference event – which takes place "in our observational present which we distinguish as being in some peculiar way our standpoint for perception". By adding to Whitehead's work, we see events as the junctions where abrupt change in the rhythmic order of time takes place. Their emergence is linked to the breaking points of the unpredicted, which are reconfiguring time flow by opening up new constellations of temporal relations and experiences (see Das 1995, Maldiney 2007: 183). As we are going to see in the next sections, the ontological substance of time as forward looking, embedded in and carried by the concept of adaptation to climate change and extreme weather events has overshadowed the significance of the percipient event involved in shaping what counts as the actual and that ends up actualising what counts as *here* and *now*.

By building on those concepts, the paper argues that intellectual and political lenses serving the analysis of adaptation to climate change-related risks and disasters have led us to a state of temporal friction whereby the belief in a need to, and the urge to, embrace the fast-forward and accelerating futures of climate change have separated us from other temporal experiences/relations that shape and affect our relationships to hazards and risks (Hassan 2009; Rosa 2010, 2013). One of those experiences/relations consists of what Martin Heidegger (1986) calls "temporal disjuncture" (*Unfung* in German), which bluntly refers to the feeling of a persisting *actual* that distorts its own transitivity in time flow, a sort of everlasting moment occurring in temporal duration (Haar 1989: 128). It is further argued that these temporal disjunctures are translating the multiplicity of durations occurring in time formation that is too often ignored, and yet, so central in influencing decisions made before, during and after hazards such as heat waves, and important to recognise in thinking our relationship to risk and hazards.

Following the introduction, this argument unfolds in four interrelated sections. The first section defines how we have we have used for this study. The second section looks at how

time and temporalities have been discussed by the geography of risk and disasters, which has led both critics and proponents of adaptation to climate change to pay less attention to the processes of time formation (such as durations) in the production of hazards and how they are experienced. Drawing on the 2013 London's heat wave, the third section exposes how the discourse and practices of adaptation to climate change have worked to frame heat wave temporality through processes of synchronisation that have prioritised accelerated clock-time futures and urgency as the dominant temporal experiences of heat waves' management. More specifically, this section looks at the anticipatory logic animating the heat wave risk management for London and emphasises the paradoxical effects of prioritising long-term and open futures on other temporal experiences such as durations. The fourth section then investigates how the experience of heat unfolds a variety of durations that take shape in the percipient event of the elderly and give sense to the actual. By investigating below the surface of what the elderly define as "day by day planning", "common sense" and what we call "the lingering effect", the paper uncovers temporal disjunctures taking place between the elderly and heat wave management advice. Fifthly, the paper concludes that both the discourse and the criticism of adaptation to date have played an important role in drawing attention to the processes of acceleration, rather than to uncovering how durations are manifested in the formation of temporal awareness and experiences that help us to question the catastrophic framings of climate change and the categories of risk, vulnerability and extreme events. By bringing together the concepts of temporal disjunctures and durations, the paper contributes not only to the geography of risk and hazards but also to the wider research investigating time and temporality in human geography as well as in the social sciences more generally.

2 Capturing durations and temporal disjunctures

Methodologically, this paper draws on a set of 30 semi-structured interviews with independent elderly people (68–95 years old) and carers in the London Boroughs of Islington, Waltham Forest and the City of London during and after the 2013 heat wave. First-hand observations and analysis of policy documents from institutions involved in framing heat wave management in England and climate-related risk worldwide have been used to triangulate the interview data. The interviews focussed on how the elderly population experienced and dealt with the heat, whilst documenting the temporal nature of human experience and time awareness: of the temporal contours and boundaries of the extreme weather and how this influenced their experience of the heat wave. All interviews were systematically coded and analysed.

Although the older community was not studied as an object of social gerontology or medical research, and the aim of the research was not to contribute to the geography of ageing (see Harper and Laws 1995, Skinner et al. 2014), some of the findings exposed in this paper could contribute to an understanding of the temporalities of ageing in late modernity (e.g. Paiva 2016). Rather, the aim was to document how those defined as the most vulnerable to heat wave risk (see WHO 2004, IPCC 2012, 2014) challenge assumptions about adaptive futures by producing a politics of time that takes place through differential durations and experiences of time. This empirical focus on the politics of time allows us to diversify what

counts as temporal experiences of hazards and to highlight what kind of time emerges from the elderly's relationships to the heat and climate-related hazards; a time situated outside the category of the future. In turn, this qualitative interest makes it possible to open a window on the formation of durations and temporal disjunctures that re part of everyday life.

3 Time and the geography of risk and hazards

Unlike floods, forest fires, hurricanes or typhoons, heat waves' temporality moves us in the experience and existence of slowness and standstill, where the urgency of climate change adaptation is confronted with the sluggish movement of life that is too often overlooked by hypermodernity proponents and critics. Yet, geographers interested in risk and disasters have not commonly engaged with these temporal dimensions of hazards, reflecting the wider enthusiasm for the discipline in conceptualising 'space' in space-time (e.g. Harvey 1989, 1996; Massey 2005). Most of the academic work on risk and disasters has rather sought to edify geography as *the* discipline capable of providing the political responses needed to react to the challenges posed by climate-related hazards. The result has been often to reduce time to a simple arrow at the bottom of a graph, meaning that its ontological dimension becomes less central to geographers interested in risk and disasters. Thus, the ways in which heat waves have been engaged with in human geography have been mainly influenced by what we can perhaps simplistically divide into two broad intellectual streams. The first of those streams, which is also highly influential on the ways in which geography has positioned itself as the 'champion' of climate-related questions, is linked to structural functionalism and environmental social science (ESS). This intellectual stream builds on a realist ontology of climate change and risks and is epistemologically grounded in climate science, epidemiology, social psychology and neoclassical economics. The second stream is linked to post-structuralism and thus it embraces a constructivist/relational ontology of climate change, which in turn conceptualises risk as a way of being and acting rather than an external entity that must be controlled. Central to this stream we find Foucauldian concepts such as governmentality and biopolitics, which serve to uncover the 'epistemological architecture' framing heat wave politics (e.g. Klinenberg 1999, 2002; Keller 2015), but also concepts that come from the philosophers of movement Gilles Deleuze and Félix Guattari (1980), such as affect, assemblages and deterritorialisation, which have helped geographers to challenge neoliberal regimes of risk-based governance involved in shaping pre- and post-disaster management (e.g. Adey and Anderson 2011; Anderson and Adey 2011; Anderson 2015; Braun and McCarthy 2005; Grove 2012, 2013, 2014). None of these broad streams is completely independent, and obviously they carry their own sets of beliefs and assumptions that have worked to frame the ways in which time is understood and reproduced in the geography of risk and hazards and the social studies of disasters.

Notwithstanding their intellectual roots, these two broad streams of geographers have mainly grounded their interpretation and critique of time in what the French philosopher Henri Maldiney calls 'explicated time' (see Maldiney 2012, Nobert et al. 2016). This explicated time occurs in its discursive and external dimensions, taking the shape of past, presents, futures, epochs and periods, etc. It is also an ontological dimension of time that

dominates physical sciences, such as meteorology and climate sciences, as well as risk governance, in the shape of scenarios and predictions. It is a time that is modelled and projected ahead, denuded of singularities and seen as univocal. While this is in part related to the highly technicist and instrumentalist roots of risk and disaster studies (e.g. White 1958, 1973), geographers of risk and hazards have remained relatively reluctant to engage with a conception of time that exists outside the universe of explicated time in a world that favours speed and futures as the dominant temporal relations. However, there is an important distinction that deserves to be made here. While geographers versed in ESS have been acting as catalysts of explicated time as an object of study and as a conceptual vehicle of research, much of the work conducted by geographers borrowing from the philosophy of movement has helped to develop a critique on its effects through the analysis of governmental rationalities. Yet, this focus has left little room to interrogate the processes shaping 'implicated time'outside the 'explicated' category of the present. According to Maldiney (2012), implicated time refers to a time of presence that exists through the multiple variations that give shape to temporal rhythms and durations and that is inherent to life; it is interrelated with explicated time in the formation of the actual, but the processes that are involved in producing it have been largely unlooked by critical studies of risk and disasters (Nobert et al. 2016).

Although the significance of explicated time in questions of climate change could also be attributable to the interest in foreseeing the development of catastrophic futures through supercomputing capacities, it is also linked to the philosophies of risk management that underpin risk discourse and practices such as the precautionary principle, which seeks to identify worst case scenarios and when those scenarios (and their consequences) are likely to manifest themselves (Jonas 1984, Dupuy 2002). Thus, the modalities of urgency and anticipation promoted by the stream of ESS and structural functionalists have made it possible to generate a 'temporal dialogue' with climate sciences and epidemiology studies in their search for practical solutions to climate-related hazards. This temporal dialogue has not only allowed geographers grounded in structural functionalism and ESS to carve out for themselves a special epistemological niche on the question of climate change (see Castree et al. 2014), but, more importantly, it has also temporalised climate change and its related hazards into an explicated time problem that requires immediate and urgent action from science-based policies (e.g. Berrang-Ford et al. 2011; Wolf et al. 2010a,b; Ford et al. 2015).

Unintentionally, and purely as a result of their research interests, Foucauldian and neo-Foucauldian scholars have also been involved in mobilising an accelerated and explicated time that shapes and is shaped by what Frédéric Neyrat (2008) defines as immuno-politics. Drawing conceptually on Jacques Derrida's (2001) concepts of the auto-immunity of the unscathed – *auto-immunité de l'indemne* in French – as well as on Roberto Esposito's process of immunisation (2011), Ulrich Beck's notion of reflexive modernity (1996) and, indeed, on Michel Foucault's biopolitics (2004), this immuno-politics is defined as seeking to avoid harm through a series of practices (e.g. structural and non-structural measures) and ways of thinking (e.g. adaptation, mitigation, resilience) that promotes the total protection of valued life by accelerating time to secure futures (see also Anderson 2010, Grove 2014). Most of the

analyses that look at the making and effects of this immuno-politics have situated their critique in a conceptualisation of risk that is defined by the sociologist Nikolas Rose (2001: 7) as "a family of ways of thinking and acting, involving calculations about probable futures in the present followed by interventions into the present in order to control that potential future". This reading of risk translates an understanding of time that has been influential on the ways in which human geographers interested in anticipatory governance, futurity and security have connected with time by emphasising that "futures are brought into the present and take on some form of presence" (Adey and Anderson 2012: 1529). Underlying these descriptions of risk and futures, explicated time remains central to the shaping of our understanding of temporal politics, implying a form of stability in the shaping of temporalities, as if futures remain open and mysterious while the present, is concrete and understandable.

When one looks at current geographical literature in the so-called Anglosphere, it becomes inevitable to note the importance of the ‘Deleuzian turn’ to geography, with the popular use of concepts such as 'assemblages' and 'affect' and the Bergsonian-rooted concepts of 'becoming' and multiplicity of times that have had a vast influence on the discipline since the mid-1990s (see Crang 2001). While this work has helped geographers to understand the role of time as being multiple, intertwined, in continual flux and in a process of becoming, most of the interventions have focussed on the production of space-time, in which time has remained almost seen as a by-product of space (Massey 2005, Lorimer 2005, Merriman et al. 2008, Merriman 2012). Although Deleuze and Guattari's (1980) concepts (e.g. affect, assemblages, deterritorialisation, etc.) have helped geographers to shape a conception of power as multiple, relational and affective in the study of disasters and risk (e.g. Grove 2014), many have connected Deleuzian concepts with a Foucauldian reading of power relations, which has the effect of reviving a historical relationship with time, founded on explicated time categories. Even though some of this work suggests that we should engage with the present as a way to redefine a politics of life outside the future-obsessed and insecure world proposed by neoliberalism (e.g. Grove 2013:15, Evans and Reid 2014, Chollet and Felli 2015), there is little guidance on how those presents should be activated and, perhaps more importantly, what kind of time constitutes, or should shape, those presents.

Indeed, phenomenologists of time such as Edmund Husserl (1905/1996), Martin Heidegger (1927/1996), Maurice Merleau-Ponty (1945) or Paul Ricoeur (1984) have all questioned the essence of time in the formation of the self and have highlighted the role of duration in accounting for the perception of what they call internal time. Their work has also provided us with capacities to think about and experience the multiple times produced and embodied in and between humans and non-humans, something that was also pursued by radical empiricists such as William James and Alfred North Whitehead. Even though these ideas have been taken by geographers to extend what counts as life and experiences in geographical knowledge, this corpus of work has remained essentially in the realms of non-representational theory and cultural geography, feeding reflections on sensory moments shaping our world, such as weather, landscapes or affective atmospheres (e.g. Anderson 2009; Lorimer 2005; Rose and Wylie 2006, Stewart 2011, 2011; Wylie 2002). This work has

also drawn on concepts such as dwelling (Heidegger 1996, Ingold 2011: 10–12), which in turn helped to reconsider the "dynamics of subjectivity and subject formation" (Harrison 2007: 643) that affect the production and perception of temporal events. Indeed, the examination of affective atmospheres and the influence exerted by the 'affect turn' in cultural theory have contributed to thinking about temporal events in geography. Affect theorists, such as Brian Massuni, Kathleen Stewart and Lauren Berlant in particular, are relevant here, as they insist on cutting off the explicated dimensions of time by looking at affects or how certain kinds of actions, desires and emotions unfold into moods and feelings that provide substance to the present. Berlant (2011) shows that through these affective moments the present becomes elastic, a process she calls the 'impasse'. If this elasticity bears some resemblance to temporal disjunctures, the entrapment of time flow in a typology of emotions, moods or feelings might not necessarily open up completely our capacities to connect to the implicated dimensions of time; it could also restrict the acknowledgement of various temporal durations and experiences to very specific states of knowing and being that overlook at the importance of banal and intentional everyday-life practices that have little to do with emotions. Although affect and non-representational theory have contributed immensely to the ways in which human geographers interrogate the constitution of internal time and space-time more generally (Thrift 1977a,b, 1996, 2008, May and Thrift 2001), it is still the case that what constitutes movement, positionality or mobility, as well as the relations within and between multiple temporalities, has been a peripheral interest for geographers interested in risk and hazards in what is defined as the pressing era of climate change. Thus, recognising durations and their manifestation in daily life is opening up a different window for the geography of risk and hazards in understanding temporal politics shaping hazards such as heat waves and the experiences.

Yet, in spite of the centrality occupied by time in the geography of risk and hazards (e.g. forecasting, the precautionary principle, preparedness actions), there has been little interest in recognising the opportunity offered by durations in accounting for the internal onflow of time, the time of presence, which resists univocal, explicated clock-time production. This is because durations unfold a large array of temporal politics affecting risk management and particularly affecting the new terminology associated with climate change, such as adaptation that is going to be explored in the next section.

4 Synchronising the 2013 London heat wave and the paradox of open futures

Although the 2013 London heat wave was far less dramatic than the heat wave that took place in Paris in 2003, the epistemological framings serving the English authorities dealing with the heat risks were largely inspired by the 2003 French post-disaster response to the 14,802 deaths resulting from the heat (Keller 2015: 127). Following the French mismanagement of the 2003 crisis, the World Health Organization (WHO), with the help of the World Meteorological Organization (WMO), decided to write a report to help European countries to respond to future heat waves (WHO 2004: 2), in which they highlight the need

for "good coordination between *health and meteorological agencies* and the development of appropriate targeted advice and intervention measures" (emphasis added) and stress that warnings should be developed alongside policy guidance. Above all, the aim of this report was to ensure that authorities and citizens alike understand the medical risks of heat waves, putting the onus on the institutions in charge of weather forecasting and public health (see Keller 2015). While the international dimension of the WHO provides the perfect platform to frame heat waves as a threat to global health by emphasising the risk of associated heart and respiratory problems, its credibility as a monitoring institution has also played an important role in making epidemiology and meteorology the trusted disciplines in the organising of heat wave hazards.

Drawing on the quantificational logic of risk, demography, epidemiology and meteorology became central to the development of powerful narratives translating heat into risk mapping, numbers and probabilities of casualties and deaths. These modes of representation have also provided us with the means through which heat waves are experienced, known and controlled (e.g. Argaud et al. 2007, Basu and Samet 2002, Kovat and Hajat 2008) while ensuring the capacity to organise ourselves ahead of catastrophic futures. In some sense, heat waves, like most extreme weather and climate-related hazards, become events through which futures are the focal point of attention. This future-oriented logic is translated into the words of Public Health England's heat wave plan (HWP) that was meant to deal with the 2013 heat wave, for which the subtitle "Making the Case: the impact of heat on health now and in the future" reasserts the ideal that the future needs to be controlled immediately to mitigate the deaths of those described as vulnerable (PHE 2013). On exploring the HWP, it becomes clear that not only a large part of heat wave management concerns providing medical advice about how to deal with the heat, but that that advice is directly linked to precipitating us in a future in which the urgency to adapt to the consequences of climate change is already defined by the UK Climate Change Risk Assessment 2012 report (CCRA). Published by the Department for Environment, Food and Rural Affairs (DEFRA 2012), the CCRA aimed at setting the target for climate change adaptation for the whole of the UK, which became the backbone of the 2013 HWP as well as the material evidence giving shape to dangerous futures. By putting adaptation at the forefront of preparedness efforts, the HWP (PHE 2013: 10) warns the British public that a warmer future climate that will lead to "rising temperatures, mainly during the summer [which] may result in an increase in death and hospital admissions due to cardio-vascular and respiratory illness. This may particularly affect vulnerable groups such as the elderly."

By reproducing the CCRA's representation of the heat, the 2013 HWP focuses on preparedness actions that aim at "detecting and preventing contingencies through a network of central, regional and local organisations" that will reach the elderly and lead them to behavioural change (Anderson 2010: 791). Although the HWP could be seen as a risk instrument resulting from an immuno-politics that deals with the elderly and those considered vulnerable to heat waves, it also plays an important role in the organisation of social relations. This organisation is not so much related to power relations, but it does reassert the dominance of explicated clock-time futures as the ontological foundation of time awareness.

For example, the HWP emphasises that "unless we take steps *now* to plan for the longer term changes we will not be prepared … to meet the expected challenges posed by climate change in the medium and longer term" (2013: 10, emphasis added). This kind of risk framing instates the temporal modality of urgency as an adaptive capacity, which leaves social actors facing a constantly expanding and catastrophic future that should be known before it unfolds (Chateauraynaud 2013). While some geographers have already highlighted the strong emphasis given to the future in the concept of adaptation (e.g. Brace and Geoghean 2011; Fincher et al. 2014, Fincher et al. 2015), these criticisms have been formulated through an understanding of time that gave priority to explicated time and the categories of past, present and future and have unintentionally played a role in overshadowing the existence of multiple temporal experiences and durations shaping the percipient event. This shadowing effect is somehow linked to the paradox of explicated time futures: while those futures are conceptualised as open, they reduce/shut down our spectrum of time perception to the contours of explicated time categories.

As the historian of concepts Reinhart Koselleck (1985) has brilliantly exposed, the social conception of time, especially of the future, witnessed an important mutation during the 19th century, mainly linked to the intellectual debates emerging from the philosophy of history. The move from a conception of the future as closed to a conception of openness and indeterminate has transfigured the ways in which the category of action that is the future has shaped collective imaginaries and framed our relations to time. In accordance with Koselleck's (1985) work, it is not imprudent to say that the emergence of modern apparatus enabling the proliferation of immunological measures such as adaptation to climate change occurred partly through the shift between closed and opened clock-time futures (Esposito 2011, Grove 2014). The resulting effects of facing an open and expanding future are not only the overemphasis placed on the insecurities brought by the uncertainties and indeterminacies of the open (e.g. Chollet and Felli 2015); they are also about defining what counts as actual and selecting which events participate in the production of the percipient event and become the reference points to temporal awareness and experiences.

For example, the most recent IPCC report (2014) stresses that "[a]daptive management places an emphasis on *taking action* and then using the lessons learned to *inform future actions* in order to make better informed, and often incremental, decisions in the face of uncertainty" (Chapter 14: 849, emphasis added). Although this statement is nothing more than a translation of adaptation thinking, it illustrates what Paul Virilio (2005: 38-39) defines as the synchronisation of collective actions, which results from the discourses and practices involved in shaping technologies and governance regimes that embody urgency as a way of being and that imposes accelerated futures as a temporal experience. The very nature of this synchronisation ideal also indicates that there is another kind of temporal awareness that detracts us from the somehow 'tamed' explicated time. Thus, if adaptation aims at synchronising action, it also selects, or at least it is assumed that it selects, what counts as temporal experience in the constitution of the percipient event. By so doing, though, both the discourse and the practices of adaptation unveil that the modalities of everyday life actions are also made of different temporal experiences that exist simultaneously with those translated by explicated time, but that we have somehow learnt to ignore.

In the current context of climate change and heat wave risk management, the discourse and practices of adaptation seem to avoid engaging with the ontological difference between the phenomenon of heat and the speed at which it occurs, moves and lasts and the temporal experiences/awareness that such extreme weather events are involved in producing among those experiencing the heat. If the urgency of adapting to climate change is embodied by a discourse and practices such as those found in the HWP, paradoxically, the interest in synchronising action in the face of climate change is unable to erase the differentiated temporal experiences that collide before, during and after climate-related events and their management. These temporal collisions lead inevitably to tensions in the ways in which heat waves are framed scientifically, acted upon politically and experienced individually, which in turn is precipitating us into a series of frictions and disjunctures between multiple temporal durations involved in positioning and actualising the now, the moment – the actual in the making. The next section will explore how those disjunctures take place in the life of the elderly, making it possible to capture a rather different definition of the time that unfolds futures through the temporal durations taking place in the percipient event of the actual, the 'here' and the 'now'.

5 Experiencing heat and locating temporal disjunctures in the experience of heat waves

Reflecting on how she was feeling when the heat wave hit London in August 2013, a 90-year-old pensioner residing in Islington was translating what most elderly people felt when she talked about the heat: "I just don't like too hot, too sticky" (Interviewee 13). If the pearls of sweat on her forehead indicated her discomfort in the heat, they were not enough to deter her interest in taking part in a card game held straight after our interview, a game constituted by people fitting into the category of 'at risk' defined by the HWP (2013). As Interviewee 13 mentioned just before ending the interview, heat "doesn't make me ill. It just makes me sweat." If her comment can be generalised to the majority of the elderly people interviewed for this research, the fact that this kind of heat could become pervasive as a result of a changing climate was not seen as catastrophic by most of the elderly people encountered in the research process. As Interviewee 12 summarised well, "I've seen a lot of cold and hot days in my life, if climate change means hotter [temperature], I suppose as you get older, you get acclimatised to it or whatever" (Interviewee 12, Islington). Getting used to "whatever" the weather or the climate brings not only implies a form of adaptive capacity to cope with recurrent hot spells as projected by the IPCC (2011, 2014), but also suggests a relation to time that differs from the urgency to capture what the open future holds before it even materialises, as extolled by climate adaptation proponents (Ford et. al 2015).

5.1 Day-by-day planning and common sense in experiencing and producing time

Although these attitudes to heat wave risk have already been well documented by research looking at the perceptions of climate- and weather-related risks among the elderly (e.g. Abrahamshon 2008, Wolf et al. 2009, 2010a,b), most of the analysis has focussed on mental models of risk communication, highlighting tensions in the risk message put forward by epidemiology to prevent an increase in both morbidity and mortality rates related to heat stress

(e.g. HWP 2013). However, this interest in the cognitive dimension of risk communication has overlooked the fact that being relaxed about the heat is also indicative of temporal disjunctions between, firstly, the urgency to adapt and to prevent loss of life in the face of dangerous heat as promoted by the HWP and, secondly, the ways in which the elderly produce and experience time. For example, when investigating how elderly people were planning for heat waves, it was clear that the open and everlasting future of climate change was ignored and replaced by what was described as "day by day planning" (Interviewee 10, Islington). 'Day by day' planning not only suggests a temporal experience that collides with that of the urgency of future-oriented of adaptation (and heat wave management more generally), but it also shows a shift of attention from the future to the actual, which in turn suggests another perception of time flow that is open to surprises and that accepts multiple directions and ruptures (see also Shirani and Henwood 2011). In other words, what guides the elderly in the planning of their lives translates a temporal experience that does not reflect (or at least that is rather absent from) the pervasiveness of explicated time moulding the HWP. Rather, we are introduced to a temporal duration that shapes what counts as the 'here' and 'now' and that opens up an ontological dimension of time to the processes that are forging the percipient event (Bergson 1927, 1939, Whitehead 1964). This Bergsonian reading of time as pure flow rather than explicated, encountered/perceived through durations, is not only demonstrated through the 'day by day' planning, but is taking place in practices that are feeding the actual and that are in part constituted by memories. As an 85-year-old described, her capacity to cope with the heat had been drawing on what she called

> my common sense, for example going out in the evening to go shopping, creating the draughts by leaving the doors open, and in case I don't feel like cooking, my son's girlfriend can do the cooking for me and he can go out shopping. It is about common sense really. (Interviewee 19, Islington)

The "common sense" that Interviewee 19 refers to was often mentioned by the vast majority of participants to describe what they did to cool themselves down during heat waves, something that was also noted in previous research on heat waves in a different context and that relates to using knowledge of the past to shape the actual (e.g. Sampson et al. 2013; Wolf et al. 2010a,b). However, unfolding this notion of common sense lays a time awareness that translates a duration that also brings us outside the realms of acceleration, urgency and speed. For example, by making use of 'common sense', Interviewee 19 looks at the current situation, sees how it develops and organises herself without needing to make major plans for the future. This connection to the *actual* also appears in the attitude of many elderly people, who say, "I always say you never know what's around the corner tomorrow. So I enjoy today … I mean the thing is just enjoying life every day" (Interviewee 3). Instead of seeing the future extending, Interviewee 3 sees it as contracting, which is an indication that her temporal experience becomes re-centred on the actual. Re-centring attention on the actual suggests that what counts for this interviewee relates to short-term planning, to the time of presence that leads us into the experience of durations, where what constitutes the actual extends rather than contracts. This contraction brings also a different sense to anticipation and to what constitutes the future.

It is also the *actual* and the interest in today rather than tomorrow that make up the substance of 'common sense' and how the latter is linked to another important temporal experience

shaping the duration of the now that needs to be put back into the discussion about heat wave management: “I take it as it comes” (Interviewee 20, Barbican). This “as it comes” is substantiated by field notes, which also help to make it clear that during the hottest days of the 2013 heat wave, most people mentioned that their main technique for dealing with the heat was to “dress lightly” and drink a bit more fluids, but few mentioned that they looked at the forecasts to check how long the heat was going to last. Although most interviewees were aware of what to do, their main reaction to the heat was to wait and see how it went. This actualisation of the now contradicts what most preventive approaches to heat emphasise, as the leitmotiv ‘people *must prepare for’* is then replaced by ‘people *deal with the heat as it unfolds*’. This repositioning reiterates that people tend to deal with extreme weather events when they become obvious to them (Abrahamson et al. 2008; Morss and Heyden 2010; Parker et al. 2009), but it also tells us something about the significance of what constitutes the actual – it introduces the sensation of the heat as focal point to the percipient event and changes the experience of time and movement, as described by an elderly man from Waltham Forest who stresses that the heat "seems to be there forever, yet it was only here for one day" (Interviewee 5).

The implication of this production of time is significant in terms of defining a sense of temporal awareness, durations and foreseeness, as what makes an event last and become knowable cannot be restricted to only social psychology or body thermodynamics; it needs to address the corporeality of time duration that escapes the predefined metrics of clock-time. Thus, how different experiences of the heat wave are retained in the passage of time links to the influx and coexistence of different durations that result in temporal disjunctures. How an event survives the actualisation of the immediate past within the immediacy of the actual is linked intrinsically to its durations (Bergson 1927). Those durations become central in defining ‘common sense’ actions that conflict with the univocal accelerated clock-time embodied in and reproduced by heat wave adaptation strategies. For example, most choices reported by the interviewees about how to cope with the heat were anchored in past experiences and in ‘common sense’ occurring in the actual, that is, at the fusion of the immediate past (e.g. memory) and the immediacy of the now in the making, rather than in advice given to them by the government that is meant to prepare them for the anticipated future. This fluidity between the lived and living is providing a different connotation to the becoming, as rather open to change, than predictable.

5.2 The lingering effect as durative time

The elderly population’s attitude of 'taking it as it comes' brings us to a duration of time through which what counts as the actual seems to flow slower than the state of urgency put forward by adaptation discourse and the medical advice of the HWP. This kind of slow-motion perspective and duration was described by Interviewee 21 (Barbican), who mentioned that being older makes her more of "an observer … because you have more time to think. Most of your life you're so busy doing your job as I was. I was working at night till I moved away. You didn't really have time to stop and think" (Interviewee 21, Barbican). This feeling of stopping and thinking in the position of an observer indicates a time lag that becomes the interviewee’s percipient event that concerns the difference between experiencing the actual and being exposed to the high-speed and accelerated life surrounding the interviewee. There is thus a

temporal disjunction taking place between the extended/elongated experience of time defining the actual and the contracted effect provoked by the urgency to adapt to future heat waves linked to the virtual. In turn, this temporal disjunction links us to what we call the lingering effect (see Liandrat-Guides 2009: 13), whereby the extended/elongated duration of time opens up a possibility to interrogate aesthetic changes in the formation of time flow and the atmospheres that are unnoticed by the contraction of the actual resulting from the overwhelming attention put on gripping dangerous futures before they develop. This lingering effect of ageing highlights another temporal disjuncture emerging from differential time durations and experiences that have been rather ignored by adaptation proponents and disaster risk reduction management more generally.

Another illustration of how the lingering effect becomes entangled with the percipient event for the elderly came from a discussion with an 83-year-old man about whether he looked at meteorological forecasts to improve his preparedness during the 2013 heat wave:

> No. It is quite interesting. You'll see the weather forecast on the television ten times a day, and even when I'm going to bed, I see the half past eleven weather forecast on *Newsnight*. Yet, you ask me ten minutes later to recount what's going on . . . it goes over my head. In a sense, it's not significant. You get a 20-minute piece of news and there are 7 or 8 minutes of weather forecast. I mean it's the time you go out to make a cup of tea or something. (Interviewee 22, Barbican)

What Interviewee 22 says in this quotation is that the daily life of an elderly person is often contingent on an extended actual. By ignoring information about the future development of the 2013 heat wave, Interviewee 22 intentionally used the time allocated to watching weather forecasts to reassert the prevalence of the actual by doing something that linked him to the lingering effect of preparing a cup of tea that was outside the rush to look for the future development of a threatening heat wave, trivialising the information about tomorrow's weather. As Interviewee 22 mentioned, the forecasted impact of the heat waves is forgotten ten minutes after the weather forecast has ended. Although many elderly people mentioned that they watch weather forecasts on the television or listen to them on the radio daily, few stressed that information about the future state of the weather would change their planning of each day in significant ways, reminding us of the extended temporal duration within which most of them define their experiences and situate themselves. Forecasted information becomes, then, a part of the temporal disjunctures occurring between the compressed future of weather predictions and the extended/elongated actual, with a result that impacts on how the elderly trust information. As Interviewee 24, a 76-year-old woman, told us:

> My husband is totally dismissive of weather forecasts. He doesn't believe it. I don't believe it. But I see weather systems moving; probably with such a small landmass, they could accelerate or decelerate and the time that you expect to get the weather, whatever it is, changes. Maybe it's not when it's changing. But when it occurs, it's not so predictable. (Interviewee 24, Barbican)

What Interviewee 24 tells us in this excerpt is that while there is an acceptance that predicting the future is difficult and always contingent on the movement that constitutes the essence of

time, the interest in the prediction is not so much in what it says about the future, but how the moment when weather patterns occur is represented. In other words, the representation of how and when the weather develops, rather than its future scenarios, seems important, indicating in the same trend an interest and trust in information that translates the movement of weather patterns in the actual. Although none of the interviewees we spoke to during this research denied the immanence of the future in the now or the virtual in the actual, the temporal disjunctures that appeared through the study of the elderly's experiences of the 2013 heat wave allow us to see tensions between different time durations that frame the experiences and the practices of managing heat waves. In turn, these durations somehow translate the phenomenological dimensions of implicated time awareness that are too often reduced and simplified by explicated time and the imposed modalities of action that are urgency and acceleration. The persistence and existence of these differentiated experiences of time and the various durations that constitute the actual contradict the belief in univocal synchronism of clock time put forward by adaptation discourse and practices in the face of climate- and weather-related risks. This contradiction deserves more attention from proponents and critics of adaptation practices and discourses, as the temporalities that are valued from the perspective of risk governance are not necessarily those defining the life of those defined as vulnerable.

By getting older and becoming 'observers' in the world they inhabit, the elderly experience the heat as it unfolds, which in turn translates into a time awareness that highlights the significance of the actual in their daily life. This actual is made of multiple and simultaneous durations that substitute the future as the only category of action that should prevail in defining our relationship to a changing climate. Thus, the elderly's experiences of the 2013 heat wave demonstrate that a political claim for greater ontological security in the face of major social and environmental challenges such as climate change will inevitably lead to overlooking the existence of different temporal experiences that might have the potential to reorient our attention to novel possibilities of engaging with both social and biophysical processes that shape our lives.

6 Conclusion: Heat waves as heuristics of temporal durations

Although the 2013 London heat wave was eclipsed by other news about more spectacular and destructive extreme weather events, the logic of anticipation and the strong emphasis on the development of adaptive mechanisms that enable us to grasp the future before a disaster strikes remain integral to our relationship with extreme weather (e.g. UNSDR 2015). One has only to look at the recent scientific and political effervescence leading to the development of climate services to realise the appeal of apprehending and controlling unwanted futures as a way of being – and an economic opportunity. However, as this paper argues, a more careful analysis of the ways in which hazards such as the 2013 heat wave are produced, represented and experienced reveal the coexistence of simultaneous temporal durations involved in the shaping of heat wave temporalities and the politics of time. While the paper shows that time has been explored and discussed in contemporary Anglo-American geography, explicated

and clock-time remain the main conceptual reference for many geographers when they talk about time; any consistency, such as the links between durations and time awareness, has been rather under-researched by geographers interested in risk and disasters.

The focus on the concept of duration has made it possible to open up a potential line of inquiry for the geography of risk and disasters by paying attention to the wider politics of time production that underpins the current discourse and practices of adaptation to climate change but also the wider communication of risks and hazards more generally. Looking at the elderly's experience of the heat wave as well as at the ways in which the elderly produce time in their daily life, the paper has shown that temporal disjunctures are central to misconnections between adaptation framing and the elderly who are categorised as vulnerable. By drawing on Whitehead's (1967) concept of the 'percipient present', we argued that the ways in which the elderly position themselves in the flow of time is contiguous to a specific kind of temporal relations, which allows them to reverse the temporalities of anticipation and acceleration underlying the open futures of adaptation with a time of presence, an implicated time in which an elongated experience of time flow is given priority. This in turn enables the elderly to pay attention to the processes of temporal durations in which the *now*/*actual* is valued, highlighting the significance of the immediate past and of the immediacy of actual as opposed to the future in expansion proposed by adaptation policy. These reversed contractions and expansions of time indicate that time awareness is central to the collision between explicated and implicated time, with the dominant explicated clock-time serving the wider discourse and practices of adaptation put in place in the framing of heat wave risk such as see in the HWP. These temporal relations challenge the temporal framing of adaptation to heat wave risk, since by propelling us into the forward action of the future and the virtual, adaptive strategies become strategies of diversion: they keep us away from the events that constitute the now and thus we become less aware of the other possibilities generated by the influx of simultaneous times. In other words, by looking constantly ahead, we have forgotten to question why we are looking ahead and what is surrounding us.

Durations not only give us an indication that there is another ontological substance to the simultaneous movement that is shaping the time of our life, but also that there is a real mix of time production and experiences that ought to be felt and understood. Yet, most attention has been focussed on finding ways to maintain or criticising neoliberal ontological security and continuity rather than questioning its modalities of action and the resulting consequences for the capacity to think in a way that is different to thinking with reference to the future and other explicated time categories. Although there are no perfect solutions to the political and subsequent climate change crisis we are currently facing at the global and local scales, exploring the formation and maintenance of durations in social practices also means acknowledging other forms of temporal dimensions that are outside those proposed by explicated clock-time and that have served to edify neoliberal futures. Exploring the qualitative dimensions of life through concepts such as duration means that it is also possible to realise that climate change adaptation needs to account for temporalities other than explicated time and its futures if it is meant to survive (Serres 2005, 2009). Thus, by focussing on temporal disjunctures and what constitutes the *actual*, we open up the ability to

recognise the forgotten capacities to think about life outside the dream of a hyper-accelerated modern world. Paying attention to what kind of time durations entail could also help to find different ways to live together and to live with the inherent movement and changes that are intrinsic to time and to life more generally.

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