Time stories: Making sense of futures in anticipation of sea-level rise

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ABSTRACT

Adjustment to predicted environmental change in a place requires people in that place to consider short- and long-term futures there. These futures are imagined with reference to pasts and presents, remembered and lived. This paper presents the stories—relating possible futures to pasts and presents—of residents in tiny, low-lying coastal communities in Gippsland East, Australia, as they make sense of the uncertain futures they may face. It identifies four time stories, about generational continuity, the temporariness of inundation, endurance and acceptance in older age, and the impermanence of infrastructure. It sets these alongside the time-based practices inherent in existing adaptation policies, which do not satisfy the demands for adaptation arising from residents' time stories. We suggest that understanding local residents' time stories can contribute to a better synchronisation in the timing of local adaptation policies.

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Introduction

Now that announcements of the likely effects of human-induced climate change have been occurring for at least a decade, many living on low-lying coastlines in developed countries are aware of the possibility of a future rise in sea levels. This paper explores how people's lived experiences of time, of the material, local, environmental changes over time that have occurred within their lifetimes and those of their familiars, are related to the ways they respond to information about a distant future. In doing so it responds to the call made by Hulme et al. (2009) to empirically assess the way that people construct ideas of climate normality and to explore the role of memory and culture. This is important for understanding climate change adaptation because adaptations to anticipated, long-term, environmental changes in a place are responses to an imagined future. Informed by social geographies and philosophies of time and futures (e.g. Shipman and Baert, 2000; Grosz, 2004; Anderson, 2010a), we argue that such imagined futures are conceived of with reference to presents and pasts, and that people link futures, present and pasts in particular ways in 'time stories' that they use to make sense of the time trajectories in which they are involved.

This paper examines the time stories currently being used by residents of tiny, low-lying coastal communities in Gippsland East in south-eastern Australia, as they become aware of the expectations of scientists and policy makers that sea-level rise (SLR) will have substantial impacts on their places over the next 80 years. It contrasts this with the time practices of coastal and climate change policy institutions, revealing a disjuncture between these and local expectations of the nature and timing of adaptation. It is not our purpose here to advise policy on how to communicate with people in places deemed vulnerable to SLR. Nevertheless, what residents' time stories reveal about how they make sense of environmental change may help in the design of adaptation programs. These programs in turn may become an integrated part of residents' time stories and thus of their lives, which may be more legitimate and effective in institutionalising sustainable adaptation to SLR.

The local case study, which is the centrepiece of this paper, presents time stories from the region of Gippsland East. The coast in this region is low-lying and largely comprised of erodible sediments, making it highly vulnerable to SLR. It is also relatively under-resourced with governmental infrastructure because its settlements are small and isolated. The population is also relatively disadvantaged socio-economically. Fig. 1 locates the four tiny settlements of the case study (at last count the population of each was between 20 and 320 people) showing them to the south-west of the larger town of Lakes Entrance. The representative of one regional government organization described the region's situation thus:

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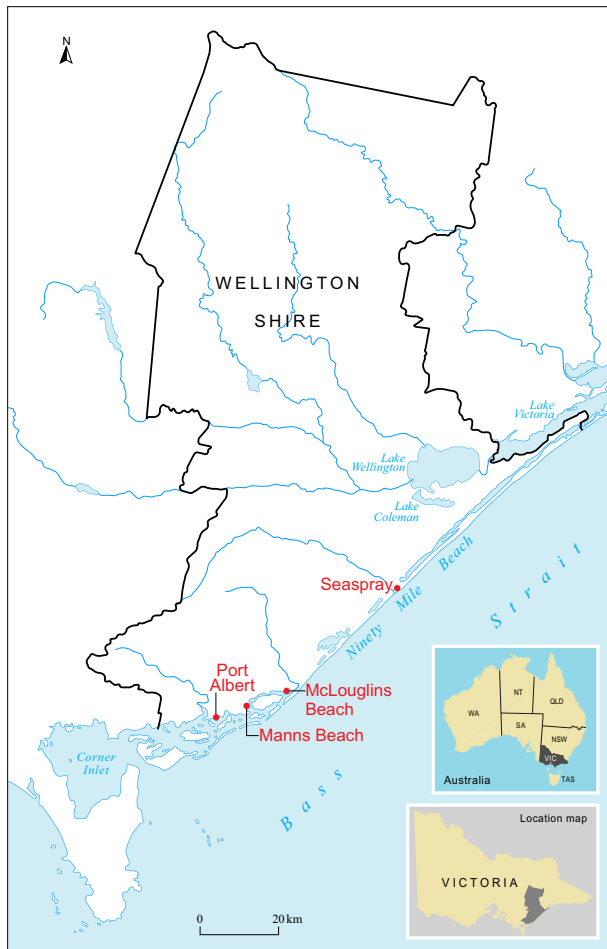
Fig. 1. Location of the four case study locations in Gippsland East.

"Gippsland is particularly low-lying and vulnerable and it is pretty obvious if there's going to be rising seas and more extreme events, that Gippsland would be probably the most susceptible region in [the State of] Victoria to those impacts... [these] beach settlements [are] the ones set behind primary dunes and within estuaries where they can get catchment-derived floods combining with coastal floods. [There are also] a lot of people living in retirement, that's their whole world, or people with single parent families on very low-lying property... they're going to be the most vulnerable, especially since they can't sell." (Policy actor interview)

This understanding of the region is shared across policy communities at various scales, ranging up to the Australian Government, whose report on *Climate Change Risks to Australia's Coasts* described the region as "one of the most vulnerable coastal areas in Australia" where SLR is "likely to lead to collapse of existing lake ecosystems and changes to land use in east Gippsland" (DCC, 2009, p. 93).

The sections of the paper to follow will, first, situate our approach to time in this study in geographical literature that theorises time. Next we explain how we accessed and analysed the time stories and time practices of residents and policy makers, respectively. We then go on to characterise the time stories of residents of Gippsland East's coastal communities, and subsequently to contrast these with the time practices inherent in adaptation policy. In conclusion, we suggest that a better understanding of local time stories can inform adaptation policies to make them more locally meaningful and effective.

Time stories and how they imagine futures

Time stories are narratives connecting pasts, presents and futures. They are distinct from what we here call 'time practices', by which we mean activities by individuals and institutions that reflect and sustain a shared understanding of time, including investments in 'things' such as housing and infrastructure, and norms and policies that seek to guide behaviour (after Reckwitz, 2002). Time stories fix time in places, and places in time. They include (often explicitly) assessments of what is just and fair and should happen in future: the end-points of time stories are often preferred futures, or suggestions about how presents or futures can right pasts. Indeed the moralising purpose and effect of narratives and stories that present realities have long been remarked (e.g. White, 1980). In this section we delineate briefly four ways that times in places have been conceptualised by geographers and others, in order to characterise the time stories of the present-day Gippsland East context.

First, geographers recognise that time is produced and understood materially, in the contexts that institutions and social mores regulate and that people inhabit (Taylor, 2009). For geographers, these material contexts are always place and space-based. So, the time-stories that people present in narratives are grounded in their material experiences of place and the spatialities of their lives.

Institutional and social definitions of time, associating individuals with societies and technologies, and with organizations like workplaces, have long been recognised as crucial to the material experience of time in place. They exist alongside the domination of clock-time in disciplining people in many cultures (Bryson, 2007; Urry, 2009). Many theorists have identified large-scale shifts in the material nature of time in different epochs (Harvey, 1990, 1996; Rosa and Scheuerman, 2009; Crang, 2010), and others have posed critical questions about large-scale variations in intergenerational equity across world regions in the future (Swyngedouw, 2010; Catney and Doyle, 2011; Amin, 2012). Some link these broad temporal and spatial processes to everyday living within them. Urry (2009), in particular, connects the epochal scale of conceptualizing time to the lived, material practices of the everyday, noting that 'glacial time' exists together in the present with (or perhaps in reaction to) 'speeded up' time, bringing tendencies to slow down as well as to hasten; he maintains that "there is no single time but a variety of times" (p. 180).

Second, largely following Lefebvre (e.g. 1991), theorists focus directly on a different time scale—that of daily life or the everyday—that is often overlooked in conceptualizations of larger time-scales. Theorists interested in change and the agency giving rise to it have examined the everyday as the temporal and spatial site of potential change, considering time (like space) to be actively produced and reproduced as it is lived, and therefore capable of being changed by those living it. A recent Lefebvrian reading of the 'Occupy' protest movements and their urban spatiality, for example, considers the temporal 'immanence' of these political rallies—they are encounters that did take place at that time, even though they could have occurred at a different time—as well as the implications of social media for the speed at which such rallying can occur (Merrifield, 2013). Other analysts, particularly feminists, see the everyday as the scale that can make the invisible visible (Burkitt, 2004). Caring and its ubiquitous times of practice is one activity made visible because of such a temporal gaze. Caring practices, whether commodified or not, rarely fit well within time-controlled work environments focusing on maximizing efficiency and will not be evident in those analyses so directed (Tronto, 2003; Dyck, 2005).

This research on everyday times has its foundations in the earlier time-space geographies of Hagerstrand (1970) and his many followers (including Carlstein et al., 1978; Pred, 1981,