Re-engaging psychology for (more) human geographies of the future

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ABSTRACT

Recent work in several fields of psychology has advanced understanding of how humans imaginatively construct, simulate and (pre-)feel the future. These advances have not yet been substantively engaged in social and cultural geography. In this paper, we identify, review and begin to draw together scholarship in human geography and several subfields of psychology on the ways in which people imagine and navigate towards the future. The most influential existing work on the future in geography has concerned powerful institutional and discursive depictions of threatening times-to-come. In contrast, psychological and neuroscientific work on cognitive processes involved in prospection extends possibilities for a human geographical approach to the future considering how people relate to discursive imaginaries and spatial environments. Reinvigoration of the human geography-psychology nexus can further critical understanding of the spatialities through which futures are imaginatively formed and felt by individuals, and are thereby brought into the realm of political and social possibility.

KEY WORDS

geographies of the future, psychology, neuroscience, navigation, imagination, prospection, episodic memory

Introduction

Recent work in several fields of psychology, some in conversation or collaboration with developments in neuroscience, has advanced understanding of how humans imaginatively construct, simulate and (pre-)feel the future. These advances have not yet been substantively engaged in social and cultural geography. That is surprising not only because of geographers' own growing interest in studying the future, but also because (1) issues of space and geography feature in at least some strands of the psychology work concerned; and (2) those spatially-attuned strands of work include contributions to memory studies, a transdisciplinary field in which geographers have also long been active. Geographical research on the future over the past decade has involved considerable traffic with other social science disciplines, particularly anthropology, so why has that not (yet) been the case with psychology? Clues may be found in existing work by geographers on memory – some preferring to leave "the scale of the individual brain" to psychologists and neurologists while focusing on "locations" of collective or social memory (Johnson, 2005), others contesting any such distinction and so dismissing psychology for its neurobiologically-bounded objectivization (Hoskins, 2012). More widely, the marginalisation and oft-repeated critiques of behavioural geography – an historically significant locus of what would today be termed 'interdisciplinary' engagement with cognitive and environmental psychologists – perhaps inflect geographers' wider perceptions of, and distancing from, psychology (Johnston & Sidaway, 2016). Yet both geography and psychology remain highly diverse disciplinary territories, with various points of proximity, overlap and potential synergy; revisiting old(er) work across the divide, including behavioural geography, can inform new efforts at interdisciplinary (re)engagement centred on "the future".

In this paper, we identify and begin to draw together scholarship in human geography and several subfields of psychology on how people imagine, relate to and navigate towards the future. In geography, the most influential existing work on futures has concerned powerful institutional and discursive depictions of threatening times-to-come. In contrast, psychological and neuroscientific efforts to understand cognitive processes involved in imagining and pre-feeling what is not yet present extend possibilities for a geographical approach to the future considering how people engage discursive imaginaries and spatial environments in their lived, human geographies. More widely and ambitiously, reinvigoration of the human geography-psychology nexus can advance understanding of the complex entanglements of individual and collective future-making, the spatialities through which imagined futures are formed and felt and, ultimately, how new forms of behaviour, selves and worlds might come into being.

The remainder of the paper is divided into two main sections. In the first, we review the growth of scholarship on the future in human geography and cognate disciplines over the past decade, and identify antecedents to some strands of this work that involved psychologists. Recent anthropological and geographical contributions to studies of the future concerning aspiration as a navigational capacity can be connected back to behavioural scholarship on way-finding and cognitive mapping by both psychologists as well as geographers. There are also longstanding strands of humanistic, feminist and

poststructuralist social geography relating to psychology in a variety of ways that could inform critical re-engagement around "the future". In the second section, we summarise work on prospection, episodic memory and future thinking that has been conducted across several subfields of psychology during the past two decades. We focus on contributions that are significant not just in advancing geographers' understanding of individual human cognitive processes of imagination and micro-scale navigation, but also in terms of collective imaginaries and larger-scale contexts of social and political action. It is on this basis that we set an agenda for geographical work on the future considering the human brain and individual cognition in reciprocal relation to extended ecologies of people, events, circulating images and ideas, as well as from the immediate spatial environment.

Retracing disciplinary steps to more human-centred future geographies

It is only during the past decade that the future has emerged and been consolidated as a focus of research in human geography. Work on "anticipatory action" (Anderson, 2010) introduced a conceptual vocabulary for examining the presence and political effects of authoritative future imaginings. For Anderson, anticipatory action is important because it brings into focus how the present is "made and lived in the name of pre-empting, preparing for, or preventing threats to liberal-democratic life" (p. 777), such as terrorism, trans-species epidemics and climate change. Anderson noted a variety of forms of lived engagement with threatening futures, but the focus of his own foundational disciplinary contribution was on the styles, practices and discursive logics through which governments and other powerful institutions legitimize action in the present. As such, geographical work on futures has been most visibly concerned with expert discourse and calculation and their relation to political power (see, for example, Amin, 2013), rather than on geographies of lived human experience. There are, however, important strands of social geography research on individual and collective human orientations to the future, including work on children's and young people's geographies (Kraftl, 2013; Naafs & Skelton, 2018; Pain et al., 2010), issues of socioecological transformation (Gibson et al., 2015; Rice et al., 2015), and the doomsday practices of "preppers" (Garrett, 2021; Barker, 2020). In addition, a recent review article proffered a prefigurative social action approach to geographies of the future (Jeffrey & Dyson, 2021; see also Ince, 2012; Asara & Kallis, 2022) in part as a counter-weight to Anderson's discursive and institutionally-driven account of anticipatory politics.

Jeffrey and Dyson's existing review article is both a necessary point of contrast for outlining the distinctiveness of our own proposed research agenda at the nexus of geography and psychology, and helpful in revealing some of the wider cross-disciplinary traffic of ideas involved in the burgeoning geographical literature on the future. Overlaps and intersections with anthropology are particularly prominent, with the last decade noted as having witnessed "intense geographical and anthropological interest in individuals' and societies' engagement with imagined futures" (Jeffrey & Dyson, 2021, p. 13). Jeffrey and Dyson's own interest in how people collectively imagine, experiment with and seek to bring into being alternative futures through forms of prefigurative politics mean that they engage work from a range of disciplines beyond anthropology, including political science, sociology and even

psychology (Beckwith et al., 2016; Brescó de Luna, 2017). The latter is unusual in wider geographical scholarship on the future to date, but a sign of interdisciplinary possibility, particularly with cultural, social and political psychologists who examine the collective imagination and performance of futures. Conversely, the emphasis that Jeffrey and Dyson place on collective action and social agency, as opposed to "individual self-transformations" – the key way in which they distinguish their approach from wider work on prefigurative politics – may limit their engagement with psychology/neuroscience work on futures that is methodologically attuned to human individuals' cognition or imagination. Moreover, in considering the "affective atmospheres" of prefigurative politics, Jeffrey and Dyson venture into the conceptual realm of more-than-human and non-representational futures which is profoundly suspicious of the (cognitive) psychological subject (Pile, 2010; Thrift et al., 2010).

The emphasis that Jeffrey and Dyson place on the improvisational collective dynamics of prefigurative struggle across time, as opposed to efforts at "realising a fixed utopia", is a point of commonality with anthropological and subsequent geographical research on aspirations. What Arjun Appadurai (2013) termed the "capacity to aspire" is not so much about an ability to articulate definitive blueprints or settled future plans – there is no settled destination or "fixed utopia", in Jeffrey and Dyson's terms – but is understood as both embedded in everyday life, and exercised through people's ongoing efforts to secure viable presents and prospect emergent possibilities. Appadurai's anthropological work on the capacity to aspire has gained traction among geographers examining the interplay of human imagination and action (Bunnell et al., 2018; Ruszczyk & Price, 2020). The conception of aspiration as a "navigational capacity" (Appadurai, 2004, p. 188), where the more privileged in any society are said to be able to use "the map of its norms to explore the future more frequently and more realistically" is of particular appeal to geographers. More than just a spatial metaphor, navigation provides an epistemological means through which geographers can examine how people negotiate future prospects and expectations in shifting socio-spatial contexts (Bunnell et al., 2018). And while they do so in highly uneven ways, the aspirational capacity of socially and economically marginal groups may be exercised and expanded through extension of their spatial experience and comparative learning opportunities – enabling a shift from "wishful thinking" to "thoughtful wishing" (Appadurai, 2004, p. 82), albeit in fluid environs that preclude any settled horizon of possibility.[1]

Appadurai's original anthropological writing on the future focused on the capacity to aspire in collective or community-based terms, rather than in terms of individual human needs and wants, or associated self-transformation. Recent work on the future in geography, in contrast, has also given consideration to individual socio-spatial navigation, and associated imaginations and emotions. Building directly from anthropological work on the capacity to aspire, Tan and Bunnell (2020), for instance, underscore ways in which street performers in Taipei spatially and socially navigate urban public spaces and wider environments of opportunity and constraint. Beyond the nexus of anthropology and geography, diverse work on "psychogeography", drawing upon scholarly, literary and political influences that far exceed Situationist International's well-known use of that term, is taking variants of this critical navigational practice to new spaces within and beyond the North Atlantic (see Sidaway, 2022). And, in a rather different spatial register, research on computer games has

considered how futures in virtual environments are explored, probed, reflected upon, experimented and played with (Shaw & Sharp, 2013). In each of these cases, there are important political questions about how individual navigation, imagination, emotions and behaviour relate to collective, social possibility: How, when, where and with whom are the subjective traces of participation in computer-mediated future worlds activated? What are the effects and affects of psychogeography writing, especially among readers whose own geographies, gender and/or ethnicity preclude direct access to the transects concerned? And in what ways can collaboration among people seeking to realise their individualised aspirations in and through space (as in the case of Taipei street performers) also generate new collective capacities and extend political horizons? In order to address such questions, it is necessary to understand individual socio-spatial behaviour as well as collective future imaginaries, and the interchange between them.

Growing interest in how individuals perceive and navigate – imaginatively and in material spatial practice – towards the future suggests rich possibilities for bringing human geography (back) into conversation with psychology, including its cognitive and neuroscientific variants. We say *back* into conversation because it is important to recall earlier work at the nexus of cognitive psychology and geography on environmental perception and environmental behaviour (including navigational wayfinding) dating back many decades (e.g. Downs & Stea, 1977; and see Kitchin et al., 1997 for a review). Seeking to revive and advance that interdisciplinary field in the mid-1990s, Kitchin (1996) not only summarized established/accumulated critiques of behavioural geographers – for their "dehumanizing" schemata that humanistic geographers considered gave insufficient room to human agency, and largely ignored the social and cultural contexts in which individual spatial decision-makers operated (Ley, 1981) – but also showed how geographers had sought to respond to such limitations through "transactional" approaches to people-environment relations. Significantly for geographers' more recent interest in the future, these "people-in-environment" transactions were partly anticipatory, including future expectations as well as past events. Kitchin's proposed theoretical frame for unifying geographical and psychological approaches to cognitive mapping in the 1990s incorporated anticipatory schema through which knowledge from memory as well as from new situations is used to construct scenarios for anticipating future outcomes, and enables navigation towards continually revised ends or goals. To date, this interdisciplinary frame has not been taken up in work on the future by social/cultural geographers.

Cognitive-behavioural work more widely has been marginalised within (at least Anglo-American) geography "as both passé and tainted with the generally perceived problems of positivism" since the 1990s (Johnston & Sidaway, 2016, p. 130). Yet consideration of psychological models and concepts has continued since that time in a variety of humanistic, feminist and poststructuralist geographical scholarship, several strands of which bear the prefix "psy-". Space precludes detailed coverage of psychiatric, psychoanalytic or psychotherapeutic social geographies, or of how they have rubbed up against each other (and we have already made mention of psychogeography above). However, it is worth noting that: psychiatric geography work has not only centred on people who fall beyond social parameters of what is considered to be "psychologically and behaviourally rational

and sane" (Wolch & Philo, 2000 p. 145), but has flagged more widely how people's "interior imaginings, fantasies and anxieties" (p. 148) involve transactions with everyday spatial environments; work in psychotherapeutic geography has incorporated insights from feminist approaches and theory to situate personal human experience, thought, emotion and practice in wider social and environmental relations (Bondi, 2005); and psychoanalytic geography pushes understanding of human action and behaviour beyond the conscious, cognition-centred, subject of mainstream psychology (Pile, 2010). However, even in work under the banner of non-representational theory, where affect has been conceptualized as transpersonal, life *includes* – even as it is understood as (far) exceeding – experiential human consciousness (Rose, 2010); indeed, human geography could be enriched through consideration of both cognitive meaning and unreflective relations (Rose, 2021). Cultural and social geography research relating to psychology in a diversity of ways, including strands that focus on forces animating the world beyond or before acts of cognitive representation, can be brought into conversation with recent psychological work on the imaginative construction, prospection and emotional (pre)feeling of future scenarios.

Prospection, episodic memory and collective future thought in Psychology – and beyond

Research on how humans imagine and mentally simulate the future has burgeoned across several fields of psychology over the past two decades, much of it focused on the role of memory. One collection of contributions from cognitive psychology notes that interest in connections between the personal past and future was galvanized in 2007 by work on "the cognitive and neural mechanisms that give rise to the ability to simulate future events" (Szpunar & Radvansky, 2017, p. 3). A highly influential paper published in that year, drawing in part upon developments in neuroimaging studies, cast "prospection" – the ability to "pre-experience" the future by simulating it in our minds – as a uniquely human capacity (Gilbert & Wilson, 2007). Other animals (and humans with damage to relevant subcortical regions of the brain), in contrast, are said to be "locked into immediate space and time" (p. 1352, citing Faglioni, 1999). On the one hand, such findings are difficult to incorporate into non-representational theory in geography – work which views the human as part of a distributed understanding of the "social" that also includes animals (see Anderson & Harrison, 2010) – except, perhaps, as an object of critique. On the other hand, insofar as prospective simulations in neuropsychological work is understood to allow people not merely to "pre-view" but also to "pre-feel" events, there are also connections to geographers' interest in affect, and how "life-going-on" involves a multiplicity of temporal trajectories as well as individual neural networks (Jones, 2011). To the extent that geography or environment feature more actively in Gilbert and Wilson's conception of human navigation through time, however, it is as part of "contextual factors" (p. 1352) – the temperature of a room, or the effects of a sunny versus a rainy day – that are understood to partly account for "errors of prospection" (p. 1352) when future events are mentally simulated in the present.

Subsequent work at the nexus of psychology and neuroscience includes contributions that afford greater prominence to the constitutive role of context, the environment and spatial experience in mental simulation of futures. Of particular likely interest to geographers are

strands of research on “constructive episodic simulation” (Schacter & Addis, 2007; in McDermott et al., 2017, p. 36) and “scene construction theory” (Hassabis & Maguire, 2007). The former builds from longstanding work on episodic memory – that component of memory which provides its owner with a record of spatial as well as temporal and self-referential features of the context in which a learning experience originally took place (Tulving, 1993) – and its relation to the simulation of personal future events. Although that past-future relationship had long been hypothesized and examined through cognitive approaches, brain neuroimaging advances over the past two decades have confirmed similarities in the neural signature of remembering and episodic future thought, especially concerning the functioning of the hippocampus. A vast field of neuro-psychological study has arisen not only from the general premise that memory allows individuals to flexibly construct potential future scenarios, but more specifically on how contextually emplaced episodic memory may provide “the building blocks for constructing mental representations of the future” (Szpunar & Radvansky, 2017, p. 3). Geography is thus not merely the backdrop to prospection but an active source for the (re)construction of future scenarios, mental time travel and affective experience of imagined futures.

As with any burgeoning field of research, much remains uncertain and disputed, including limits to the role of the hippocampus as well as the contributions of episodic memory to future-oriented thought and behaviour (Klein, 2017). Scene Construction Theory proposes that the role of the hippocampus encompasses episodic memory, spatial navigation, future-thinking and imagination to enable the mental construction of emotionally coherent prospective scenes (Mullally & Maguire, 2014). For neuroscientists or cognitive psychologists, the role of imagination in particular might be a contributing factor to the “errors” or inaccuracies of prospection (Gilbert & Wilson, 2007). For some geographers of a (post-)humanistic bent, in contrast, imagination may comprise the element of “agency” that was deemed historically to have been lacking in behavioural geography; mental scenes are thus partial not so much because of memorial limitations but due to powers of imagination arising from (and continually remade through) selective transactions with the immediate material environment, other people and wider social and ideational contexts. The visual and representational connotations of mental “scenes” may be off-putting to geographers accustomed to emphasizing multisensory practice, performance and the non-representational, but the cognitive processes involved in the imagination of mental images also generate emotions and experiences of senses other than (fore)*sight*. Future-oriented mental images may, then, play a role in embodied practice in ways that geographers have already recognised for individual memory (Jones, 2011). It is the delimited constitutive spatiality of individual human systems of memory and imagination in most neuro-psychological work – largely limited to place-based episodic memory and navigational transactions with(in) the immediate environment – that remain unsatisfactory for us as academic geographers.

Significantly in terms of prospects for interdisciplinary engagement, psychologists contributing to memory studies have begun to situate individual human imagination of the future in collective and macroscale social geographies. Work in cultural psychology considers remembering as a socioculturally mediated process involving social scripts and

narratives (Brescó de Luna, 2017). These are understood to inflect personal imagination of future possibilities, and as guiding action towards goals and aspirations in the present. At one level, such normative narrative dimensions shift attention away from individual episodic memory (and future-thinking) and towards more general or propositional knowledge about oneself, one's communities, and the world – so-called "semantic memory" – that is often acquired through education, the media and other institutions, as well as through social and environmental interaction. Here it is worth noting that the intertwining of episodic and semantic memory was signalled by the notion of "dual coding" in Kitchin's retheorization of human-environment transactions across the geography-psychology divide in the 1990s (Kitchin, 1996). Recently, interdisciplinary collaborations involving scholars of cognitive psychology and communication studies have advanced related ideas, considering not just episodic and semantic memory, but also how the specific and the schematic, the individual and collective imbricate in complex ways in human prospective imagination and navigation across time and space (Szpunar & Szpunar, 2016). We see this as a frontier of transdisciplinary research on the future to which geographers are very well placed to contribute. Existing work on ecologies of memory, connecting personal memory function with wider histories and geographies through a range of texts, images and material artefacts (Tolia-Kelly, 2016), or place-based healing and memory work (Yambao et al., 2022), for example, could clearly be brought into productive conversation with psychologists' interest in the imbrication of individual and collective future thought.[2]

Although human geographers working on the future have not yet engaged neuro-psychological research on prospection and mental imagination of the future (and nor does there appear to have been any serious engagement in the other direction), scholars working in other transdisciplinary fields have begun to make productive use of this nexus. This includes work on climate change and the possibility of transformation to alternative socio-climatic futures in which there have been efforts to theorise imagination as a linked system of "cognitive-social processes" (Milkoreit, 2017, p. 8). Milkoreit draws upon both geographical and neuro-psychological work in seeking to bridge imagination processes in the individual mind on the one hand, and larger-scale social imaginaries and ideational contexts on the other. Authoritative visions of the future – whether threatening or alluring – do not just legitimise or rationalise political responses in the present, but "burrow into human identity and subjectivity" (Jasanoff & Kim, 2015, p. 338). And, importantly for social and cultural geographers in particular, as Milkoreit shows, powerful and potentially spatially-far reaching imaginative resources include popular culture as much as formal political speeches, policies or agendas (something that has long been acknowledged in geographical work on the "cognitive spaces" opened by science fiction writing – Kitchin and Kneale, 2001; see also Kurniawan & Kundurpi, 2019). Relatedly, within studies of moral emotions (Haidt, 2012), imagination is central to collective cognitive processes as people navigate everyday timespaces, interacting through communication channels that facilitate new macro-scale imaginaries.[3]

Conclusions: Prospective critical human geographies

Given the burgeoning of research on the future in human geography over the past decade, it is surprising how little attention has been given to the ways in which individual people engage future worlds. Work conducted in psychology and neuroscience during roughly the same period which has advanced understanding of how humans imaginatively construct, simulate and (pre-)feel the future has so far attracted little interest from geographers. This may simply be a reflection of wider disciplinary partitioning, although substantive scholarly traffic with other disciplines (most notably anthropology) in geographical work on imagined futures suggests a more specific critical distancing from psychology. This would also appear to be borne out by the fact that much of the recent neuro-psychology scholarship on prospection and episodic simulation of future scenarios which we have reviewed emerges from an interest in memory. In the transdisciplinary field of memory studies, geographers have either left what is presumed to go on in human heads to psychologists/neuroscientists (Johnson, 2005) or reduced the contributions of these disciplinary others to objects of a critical geographical gaze (Hoskins, 2012). While such critique clearly has scholarly value in its own right, it does not – or should not – preclude more constructive or even collaborative (re)engagement. Our main aim in this paper has been to open the possibility of advancing (more) human geographies of the future by venturing into the domain of psychological work on individual as well as collective futuring processes. We have also sought to show that revisiting historical scholarship at the nexus of the two disciplines could be helpful in efforts to foster new interdisciplinary synergies.

Not only does any call for reengagement with psychology run up against the historical tainting of cognitive-behavioural work (Johnston & Sidaway, 2016), but our own agenda for a human-centred geographical approach to the future involves at least two other significant points of disciplinary friction. First, as we have noted, existing recent geographical research on the politics of prefiguration has focused on social movements and collective (*not* individual) action. This explicit political preference arises not out of concerns over neuro-psychological objectification of the brain and associated processes of remembering or imagination, but from wider critique of neoliberal individualisation (Jeffrey & Dyson, 2021; see also Pimlott-Wilson, 2017; Raco, 2012). Second, the current disciplinary ascendency of non-representational theory and relational ontologies has made for social and cultural geographies that foreground trans-human entanglement and more-than-human assemblages that trouble boundaries of the individual human and even the social (e.g. Anderson & Harrison, 2010). Several decades after the heyday of humanistic geography – which itself rose to prominence in part as a reaction to concerns with cognitive-behavioural and wider positivist geographies – assertion of the individual human subject in human geography may be read as naively and uncritically humanistic (even if an authoritative case may be made for why the social is still important – see Cresswell, 2010).

Consideration of our own relationships with these prevailing (and important) lines of disciplinary thought has given us pause for thought. Ultimately, however, they are helpful to us in articulating an agenda-setting question: in what ways might geographers engage psychology and neuroscience to generate human-centred, yet critical geographies of the future? Social or cultural geographers could mobilize a wide range of post-structuralist, (post-)humanist, behavioural or other resources to address this question, in line with their

own philosophical as well as political preferences. But surely it is a question worth expending further effort to answer, including at the level of *individual* human imagination and socio-spatial navigation. Attending to individual human experiences or cognitive processes is not necessarily on the side of mis-placed 'be the change' agency or heroic individualism (for a related argument on critiques of "resilience" as neoliberal, see DeVerteuil & Golubchikov, 2016). On the contrary, linked sociocognitive processes can help understand how people come to form part of – and contribute to – wider movements and socio-political imaginaries, and reveal how people identify with some futures and not others (Rose, 2021). Similarly, attending to more-than-human geographies, distributed systems of pre-cognitive affective infrastructure, or what Anderson (2020, p. 614) recently referred to as the "assembled effect" of culture, does not render work on individual human subjects in geography, or on experiential consciousness, intellectually or politically obsolete. To the extent that neuro- and otherwise diverse people retain capacity for conscious choice and thought – the ability to choose one vision of the future or another – an "I" (even considered in interdependent relation with a "we", and in more languages than one) remains necessary to the political (Rose, 2010).

Attending to individual cognitive processes in bodies navigating through timespace provides one possible means to realize (more) human geographies of the future. It implies asking how individuals and groups seek to make and shape futures, as well as how they relate to often would-be hegemonic expert and institutional discourses that drive otherwise unpeopled scholarship on anticipatory politics. Especially if the human brain and individual cognition are understood in reciprocal relation to extended ecologies of people, events, circulating images and ideas, as well as in terms of transactions with the immediate spatial environment, work (re)engaging psychology and neurology has much to contribute to a critically human geography literature on future-making.

References

Amin, A. (2013). Surviving the turbulent future. *Environment and Planning D: Society and Space*, 31, 140-156. https://doi.org/10.1068/d23011

Anderson, B. (2010). Preemption, precaution, preparedness: Anticipatory action and future geographies. *Progress in Human Geography,* 34, 777–798. https://doi.org/10.1177/0309132510362600

Anderson, B. (2020). Cultural geography III: The concept of 'culture'. *Progress in Human Geography,* 44, 608-617. https://doi.org/10.1177%2F0309132519856264

Anderson, B. & Harrison, P. (2010) (Eds.) *Taking Place: Non-representational Theories in Human Geography*. Ashgate, Farnham.

Appadurai, A. (2004). The capacity to aspire: Culture and the terms of recognition. In V. Rao & M. Walton (Eds.) *Culture and Public Action* (pp. 59–84). Stanford, CA: Stanford University Press.

Appadurai, A. (2013). *The future as cultural fact: Essays on the global condition*. London: Verso.

Asara, V. & Kallis, G. (2022). The prefigurative politics of social movements and their processual production of space: The case of the indignados movement. *Environment and Planning C: Politics and Space*, forthcoming. https://doi.org/10.1177/23996544221115279

Barker, K. (2020). How to survive the end of the future: preppers, pathology, and the everyday crisis of insecurity. *Transactions of the Institute of British Geographers,* 45, 483–496. https://doi.org/10.1111/tran.12362

Beckwith, M., Bliuc, A.-M., & Best, D. (2016). What the recovery movement tells us about prefigurative politics. *Journal of Social and Political Psychology*, *4*, 238-251. https://doi.org/10.5964/jspp.v4i1.548

Bondi, L. (2005). Making connections and thinking through emotions: Between geography and psychotherapy. *Transactions of the Institute of British Geographers*, 30, 433-448. https://doi.org/10.1111/j.1475-5661.2005.00183.x

Brescó de Luna, I. (2017). The end into the beginning: Prolepsis and the reconstruction of the collective past. *Culture & Psychology*, *23*, 280–294. https://doi.org/10.1177/1354067X17695761

Bunnell, T., Gillen, J. and Ho, E. (2018) The prospect of elsewhere: Engaging the future through aspirations in Asia. *Annals of the American Association of Geographers, 108*, 35-51. https://doi.org/10.1080/24694452.2017.1336424

Cresswell, T. (2010). New cultural geography – an unfinished project? *cultural geographies*, *17*, 169-174. https://doi.org/10.1177%2F1474474010363845

DeVerteuil, G. & Golubchikov, O. (2016). Can resilience by redeemed? Resilience as a metaphor for change, not against change. *City, 20*, 143-151. https://www.tandfonline.com/action/showCitFormats?doi=10.1080/13604813.2015.1125714

Downs, R.M., & Stea, D. (1977). *Maps in Minds: Reflections on Cognitive Mapping*. New York: Harper and Row.

Faglioni, P. (1999). The frontal lobe. In Denes, G., & Pizzamiglio, L. (Eds.), *Handbook of clinical and experimental neuropsychology* (pp. 525–569). East Sussex, UK: Psychology Press.

Garrett, B. (2021). Doomsday preppers and the architecture of dread. *Geoforum, 127,* 401-411. https://doi.org/10.1016/j.geoforum.2020.03.014

Gibson, C., Head, L. & Carr, C. (2015). From incremental change to radical disjuncture: Rethinking everyday household sustainability practices as survival skills. *Annals of the Association of American Geographers, 105,* 416-424. https://doi.org/10.1080/00045608.2014.973008

Gilbert, D. T., & Wilson, T. D. (2007). Prospection: Experiencing the future. *Science*, *317*, 1351-1354. http://doi.org/10.1126/science.1144161

Haidt, J. (2012). *The Righteous Mind: Why Good People Are Divided by Politics and Religion*. New York: Pantheon.

Hassabis, D., & Maguire, E. A. (2007). Deconstructing episodic memory with construction. *Trends in cognitive sciences*, *11*, 299-306. https://doi.org/10.1016/j.tics.2007.05.001

Hoskins, G. (2012). Lobotomizing Logics: A Critique of Memory Sports and the Business of Mapping the Mind. In O. Jones & J. Garde-Hansen (Eds.), *Geography and Memory*: *Explorations in Identity, Place and Becoming* (pp. 234-249). London: Palgrave Macmillan. https://doi.org/10.1057/9781137284075_14

Ince, A. (2012). In the shell of the old: Anarchist geographies of territorialisation. *Antipode, 44,* 1645-1666. https://doi.org/10.1111/j.1467-8330.2012.01029.x

Jasanoff, S., & Kim, S-H. (2015) *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*. Chicago: University of Chicago Press.

Jeffrey, C. & Dyson, J. (2021). Geographies of the future: prefigurative politics. *Progress in Human Geography, 45*, 641–658. https://doi.org/10.1177/0309132520926569

Johnson, N. (2005). Locating memory: Tracing the trajectories of remembrance. *Historical Geography*, 33, 165-79.

Johnston, R., & Sidaway, J.D. (2016). *Geography and Geographers: Anglo-American Human Geography since 1945*. Abingdon: Routledge.

Jones, O. (2011). Geography, memory and non-representational geographies. *Geography Compass*, *5*, 875-885. https://doi.org/10.1111/j.1749-8198.2011.00459.x

Kitchin, R. M. (1996). Increasing the integrity of cognitive mapping research: appraising conceptual schemata of environment-behaviour interaction. *Progress in Human Geography*, *20*, 56-84. https://doi.org/10.1177/030913259602000104

Kitchin, R.M., Blades, M., & Golledge, R.G. (1997). Relations between psychology and geography. *Environment and Behaviour, 29,* 554-73. https://doi.org/10.1177/001391659702900406

Kitchin, R., & Kneale, J. (2001). Science fiction or future fact? Exploring imaginative geographies of the new millennium. *Progress in Human Geography*, *25*, 19-35. https://doi.org/10.1191/030913201677411564

Klein, S.B. (2017). Autonoetic consciousness: Reconsidering the role of episodic memory in future-oriented self-projection. In Szpunar, K.K., & Radvansky, G.A. (Eds.), *Imagining the Future: Insights from Cognitive Psychology* (pp. 173-93). Abingdon: Routledge.

Kraftl, P. (2013). *Geographies of alternative education: Diverse learning spaces for children and young people*. Bristol: Policy Press. https://doi.org/10.1332/policypress/9781447300496.001.0001

Kurniawan, J.H. & Kundurpi, A. (2019). Integrating human geography into futures studies: reconstructing and reimagining the future of space. *Geography Compass*, 13, Article e12443. https://doi.org/10.1111/gec3.12443

Ley, D. (1981). Behavioural geography and the philosophies of meaning. In Cox, K.R. & Golledge, R.G. (Eds.), *Behavioural Problems in Geography Revisited*. Evanston, IL: Northwestern University Press, pp. 209-30.

McDermott, K.B., Wooldridge, C.L., Rice, H.J., Berg, J.J., & Szpunar, K.K. (2017). Visual perspective in remembering and episodic future thought. In Szpunar, K.K., & Radvansky, G.A. (Eds.), *Imagining the Future: Insights from Cognitive Psychology* (pp. 35-45). Abingdon: Routledge, pp. 35-45.

Milkoreit, M. (2017). Imaginary politics: Climate change and making the future. *Elementa: Science of the Anthropocene*, *5,* Article 62. https://doi.org/10.1525/elementa.249

Mullally, S. L. and Maguire, E. A. (2014). Memory, imagination, and predicting the future: A common brain mechanism?. *Neuroscientist*, *20*, 220–34. https://doi.org/10.1177/1073858413495091

Naafs, S., & Skelton, T. (2018). Youthful futures? Aspirations, education and employment in Asia. *Children's Geographies*, *16*, 1-14. https://doi.org/10.1080/14733285.2018.1402164

Pain, R., Panelli, R., Kindon, S., & Little, J. (2010). Moments in everyday/distant geopolitics: Young people's fears and hopes. *Geoforum,* 41, 972–82. https://doi.org/10.1016/j.geoforum.2010.08.001

Pile, S. (2010). Emotions and affect in recent human geography. *Transactions of the Institute of British Geographers, 35*, 5-20. https://doi.org/10.1111/j.1475-5661.2009.00368.x

Pimlott-Wilson, H. (2017). Individualising the future: the emotional geographies of neoliberal governance in young people's aspirations. *Area*, *49*, 288-295. https://doi.org/10.1111/area.12222

Pinder, D. (2015). Reconstituting the possible: Lefebvre, utopia and the urban question. *International Journal of Urban and Regional Research*, *39*, 28-45. https://doi.org/10.1111/1468-2427.12083

Raco, M. (2012). Neoliberal urban policy, aspirational citizenship and the uses of cultural distinction. In Tasan-Kok, T. & Baeten, G. (Eds.) *Contradictions of Neoliberal planning: Cities, policies and politics* (pp. 43–59). Dordrecht, The Netherlands: Springer.

Rice, J. L., Burke, B.J. & Heynen, N. (2015). Knowing climate change, embodying climate praxis: experiential knowledge in Southern Appalachia. *Annals of the Association of American Geographers,* 105, 253-262. https://doi.org/10.1080/00045608.2014.985628

Rose, M. (2010). Envisioning the future: Ontology, time and the politics of non-representation. In Anderson, B. & Harrison, P. (Eds.) *Taking Place: Non-representational Theories in Human Geography* (pp. 341-361). Ashgate, Farnham.

Rose, M. (2021). The question of culture in cultural geography: Latent legacies and potential futures. *Progress in Human Geography, 45*, 951-971. https://doi.org/10.1177/0309132520950464

Ruszczyk, H. A., & Price, M. (2020). Aspirations in grey space: Neighbourhood governance in Nepal and Jordan. *Area, 52,* 156–163. https://doi.org/10.1111/area.12562

Schacter, D. L., & Addis, D. R. (2007). On the constructive episodic simulation of past and future events. *Behavioral and Brain Sciences*, *30*, 331-332. https://doi.org/10.1017/S0140525X07002178

Shaw, I.G.R., & Sharp, J.P. (2013). Playing with the future: Social irrealism and the politics of aesthetics. *Social and Cultural Geography, 14,* 341-359. https://doi.org/10.1080/14649365.2013.765027

Sidaway, J. D. (2022). Psychogeography: Walking through strategy, nature and narrative. *Progress in Human Geography, 46*, 549-574. https://doi.org/10.1177/03091325211017212

Szpunar, K.K., & Radvansky, G.A. (2017). "Cognitive approaches to the study of episodic future thinking". In Szpunar, K.K., & Radvansky, G.A. (Eds.), *Imagining the Future: Insights from Cognitive Psychology* (pp. 1-8). Abingdon: Routledge.

Szpunar, P. M., & Szpunar, K.K. (2016). Collective future thought: Concept, function, and implications for collective memory studies. *Memory Studies*, *9*, 376-389. https://doi.org/10.1177/1750698015615660

Tan, X.W.A., & Bunnell, T. (2020). Extending aspirations: Taipei street performers and collaborative possibility. *Transactions of the Institute of British Geographers, 45,* 299–312. https://doi.org/10.1111/tran.12344

Thrift, N., Harrison, P. & Anderson, B. (2010). 'The 27th letter': An interview with Nigel Thrift' In Anderson, B. & Harrison, P. (Eds.) *Taking Place: Non-representational Theories in Human Geography* (pp. 183-198). Ashgate, Farnham.

Tolia-Kelly, D. P. (2016). *Landscape, race and memory: Material ecologies of citizenship*. London: Routledge. https://doi.org/10.4324/9781315591384

Tulving, E. (1993). What is episodic memory?. *Current Directions in Psychological Science*, *2*, 67-70. https://doi.org/10.1111/1467-8721.ep10770899

Wolch, J., & Philo, C. (2000). From distributions of deviance to definitions of difference: past and future mental health geographies. *Health & Place, 6*, 137-157. https://doi.org/10.1016/S1353-8292(00)00019-8

Yambao, C. M. K., Wright, S., Theriault, N., & Castillo, R. C. A. (2022). "I am the land and I am their witness": placemaking amid displacement among Lumads in the Philippines, *Critical Asian Studies*, 54:2, 259-281. https://doi: 10.1080/14672715.2022.2059771

[1] In the way that spatial experience here is understood to expand imagination of and possibilities for realizing alternative social worlds, there is potential synergy with work on utopian urban movements – insofar as that is understood to involve futures are "radically open", revisable (Pinder, 2015). Clearly, that strand of geographical work on the future has a very different cross-disciplinary and political genealogy to Appadurai's anthropological work.

[2] Writing that engages ecologies of memory is among the few existing instances of work in human geography that has constructively engaged psychology work on individual cognition and neural systems (as opposed to the collective concerns of cultural, social or political psychologists) (Jones, 2011).

[3] Given that earlier efforts to marry cognitive psychological and geographical perspectives identified preferred scales of analysis as a key point of disciplinary differentiation – the former concerned with individuals in micro-scale environments, the latter dealing with groups at the "macroenvironmental scale" (Kitchin, 1996, p. 59) – then the kind of multiscalar and multidirectional conceptualization of future imagination in recent research on climate change and moral emotions holds great promise for spatially-attuned interdisciplinary work on the future more widely.