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A response to Bassett and Fogelman's "Déjà vu or something new? The adaptation concept in the climate change literature"

A response to Bassett and Fogelman (2013) 'Déjà vu or something new? The adaptation concept in the climate change literature' in *Geoforum* 48. 42-53

Abstract: *This critical review debates the issues raised in Bassett and Fogelman's 2013 article "Déjà vu or something new? The adaptation concept in the climate change literature". After summarising the main findings of their article, we examine the methodology that Bassett and Fogelman adopted. We question the narrow sample of journals analysed, which we argue has led to a bias in the conclusions drawn. We use this opportunity to draw attention to the use of systematic literature reviews as an important methodological approach to synthesise the climate change adaptation literature. To demonstrate this we discuss the use of an alternate method more akin to that of a systematic literature review, and highlight where differences between this and the originally proposed methodology exist, and what this means for the concluding results.*

Keywords: Adaptation; systematic review; climate change; research

Bassett and Fogelman (2013) open up an important discussion on whether adaptation discourse is a case of '*déjà vu or something new*'. They review, classify, and analyse how adaptation as a concept is enacted in 558 articles across four journals[1], which they argue represent the mainstream climate change literature. As the focus moves from adjustment, to reformist and finally transformative adaptation, the solutions also move from risk management, to alteration of the rules and regulations that give rise to vulnerability within the boundaries of the existing system, to the 'political regime shift' that will change the existing system altogether. Through a content analysis of the aforementioned adaptation articles, the dominance of 'adjustment adaptation' approaches in the literature is identified. Whilst we welcome Bassett and Fogelman's critical analysis of the conceptualisation of adaptation as a much needed contribution to the burgeoning literature on characterising and classifying adaptation research (e.g. Arnell, 2010, Ford et al., 2011, Berrang-Ford et al., 2011, Hofmann et al., 2011), we would like to use this as an opportunity to ask: i) how can a meaningful review of existing research on climate change adaptation be successfully achieved; and ii) consequently how would an altered approach impact upon the conceptualised classification of adaptation?

To demonstrate an alternative approach and provide an illustration of how method and findings are inextricably linked – a fact both authors and readers always need to be aware of - we used a method more akin to that of the systematic literature review. We suggest this would be a useful tool to systematically synthesize the existing research on climate change adaptation.

[1] The four journals reviewed are *Climate and Development, Climatic Change, Global Environmental Change* and *Mitigation and Adaptation Strategies for Global Change*.

Although Bassett and Fogelman's paper set out to answer whether it was *déjà vu* or more *something new* in the field of adaptation research, we did not aim to repeat the content analysis conducted in the original paper. Instead we wanted to highlight that our method revealed a number of additional journals that also ought to be considered when analysing the adaptation concept as they clearly contribute to and inform current thinking.

Systematic literature reviews are an increasingly used approach to synthesis large bodies of research. Though widely used in the health sciences, it is still relatively novel within wider environmental fields, let alone climate change (Ford and Pearce, 2010). This may be, for example, due to the fact that identifying indicators of adaptation and measuring them can vary considerably between studies, making the consolidation of knowledge challenging (Rudel, 2008). Yet systematic reviews are recognised as methodologically essential within climate change science, for example Berrang-Ford et al. (2011), Ford and Pearce (2010), Stechemesser and Guenther (2012), Rist et al. (2013), Nichols et al. (2009), and Martins and Ferreira (2010).

'A systematic review is a summary and assessment of the state of knowledge on a given topic or research question, structured to rigorously summarize existing understanding' (Ford et al., 2011: 328). Such approaches provide a useful tool to test specific hypotheses (Petticrew, 2001). They are conducted following a clearly prescribed method: 1) state clearly which sources are used and which search terms are employed; 2) declare criteria for the inclusion and exclusion of sources and publicise all of the review information; and 3) define a clear set of review questions for the appraisal/ assessment of relevant research (Ford et al., 2012). To date, only a limited number of systematic literature reviews have specifically focused on climate change adaptation including for example characterising adaptation actions (Berrang-Ford et al., 2011), adaptation in developed nations (Ford et al., 2011), and the classification of adaptation research in Europe (Hofmann et al., 2011).

What appeal does this methodology, sometimes criticised for being too mechanistic (Fedorowicz et al., 2011), have for the field of climate change and adaptation? Firstly, it addresses the possible bias or subjectivity that can arise from the decisions researchers make when conducting a meta-analysis (Rudel, 2008). It also provides a robust foundation for evidence based decision making (Petticrew, 2001, Fedorowicz et al., 2011), yet is reproducible, rigorous and transparent enough to address the challenges of understanding and effectively synthesizing a rapidly expanding field of research and knowledge (Ford et al., 2012, Petticrew and McCartney, 2011). It thus helps to accurately highlight research strengths and weaknesses, avoid duplication in research and guide evidence based strategic planning (Ford et al., 2012). To

further explore how a systematic literature review could support the original paper and its findings, we conceptualise in Figure 1 suggested changes to the research process which could potentially impact on the original findings.

Step 1 stylises the methodology followed by Bassett & Fogelman. Four journals, chosen based on 'their emphasis on the human dimension of global environmental change, their publication of social science perspectives on global change issues, and by the interest of their editorial boards in the adaptation question', and the IPCC reports up to 2007 are for the purpose of the original analysis defined as representative of the climate change literature (Bassett and Fogelman, 2013: 43). Bassett & Fogelman then search for 'adaptation' from 1996 – 2011 within these journals. Through their content analysis of papers retrieved through this search, they find that the IPCC definition of adaptation as 'adjustment' dominates and that 'reformist' or 'transformative' adaptation is much less represented in the climate change literature. We repeated the original search for adaptation articles published during the same period (1996-2011) and in the same four journals using Web of Knowledge (WoK). Not only has this search engine proven to be useful for the purpose of systematic literature reviews (Berrang-Ford et al., 2011), but when we conducted the search as set out by Bassett and Fogelman we retrieved a sample comparable in size to theirs, thus confirming the suitability of this search engine (563 papers)[2].

In Step 2 we wanted to present a method that would allow a wider sampling strategy to represent the '*mainstream*' climate change literature using concepts akin to the systematic literature review. To facilitate the sampling of the research space, we again used WoK. We repeated the search for 'adaptation' over the same time period, but covered all journals in WoK. This yielded 7665 articles across 1623 journals. Recognising that a large proportion of these may not be specific to adaptation to climate change, we filtered the results to only include the 42 journals with the highest frequency of adaptation-related publications in WoK and ranked them accordingly[3].

[2] This search was conducted in May 2013, prior to changes to the WoK search engine process.

[3] Due to the nature and limitations of this response, we had to constrain the number of journals we looked at and thus chose a cut-off point of journals with at least 30 articles published on adaptation during the analysed time span. Although this means our systematic review could not be fully comprehensive, we nevertheless believe our findings support our arguing that a more systematic review is needed, and extending the journals in the analysis would only strengthen this point further.

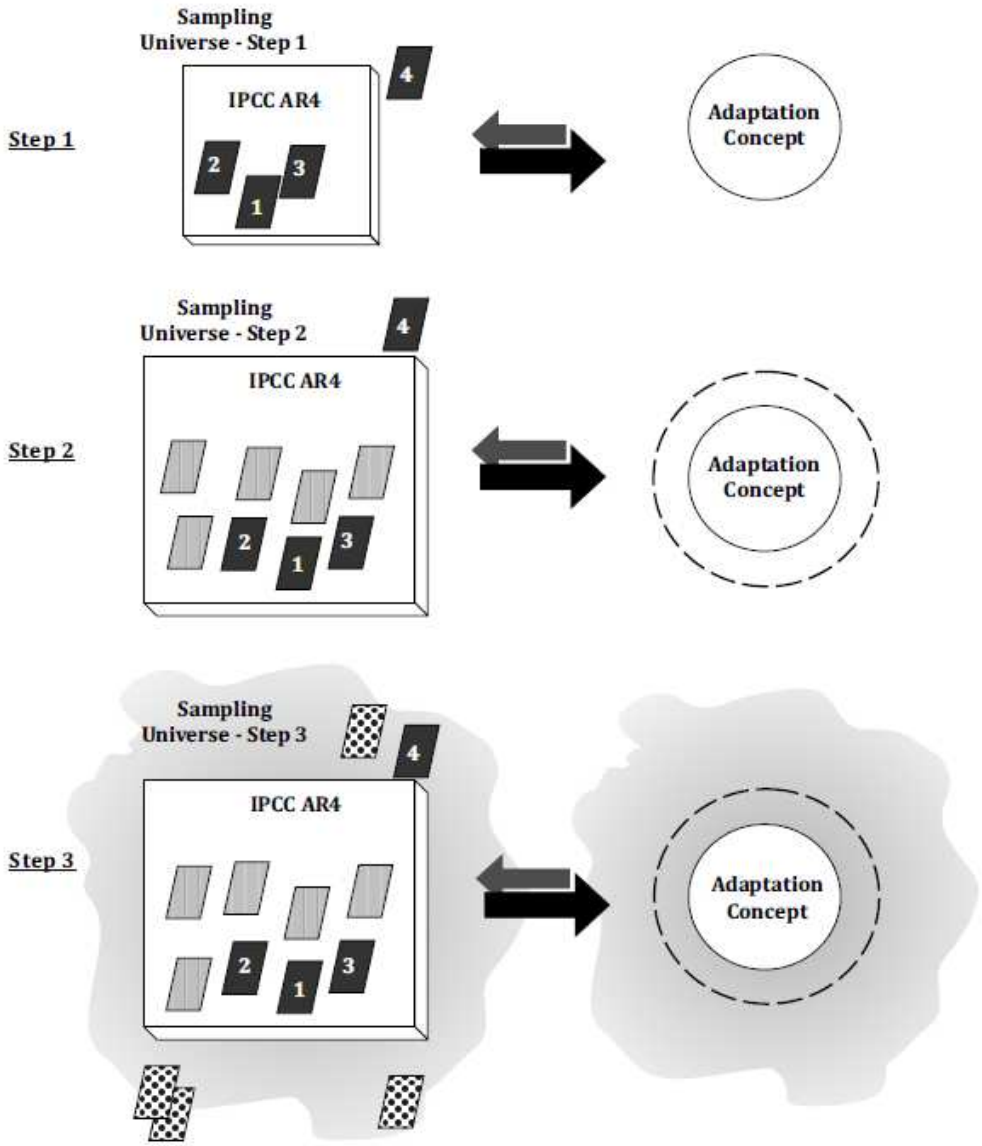

Figure 1. Author's methodological approach and its influence on the conceptualisation of adaptation – Step 1 is a simplified representation of the method adopted by Bassett and Fogelman, where the boxes 1-4 represent the 4 journals and IPCC reports included in the original search. Step 2 shows how expanding the sampling field to include other journals cited by the IPCC may broaden the adaptation concept, and Step 3 identifies potential for further enhancements to the methodology, by including more journals than those used by the authors, thus extending the conceptualisation of adaptation beyond the climate change literature. NB Journal '4', Climate & Development, only began publication in 2009 and therefore lies outside the IPCC AR4 boundary yet within the sampling universe of peer-reviewed academic literature. Whilst the sampling universe will shape the understanding of the adaptation concept (as shown by the black arrow), this is in fact a cyclical system whereby the adaptation concept will also influence future peer-reviewed literature (grey arrow)that builds on existing conceptual understandings.

We cross-checked our results with the frequency of citations of each of the 42 journals within the IPCC Forth Assessment Report Working Group 2 (Impacts, adaptation and Vulnerability) (IPCC AR4 WG II)[4], assigning each journal a second ranking depending on the IPCC citation score. Finally, a total mean score and rank for each journal could then be assigned. Cross-tabulating our results with the IPCC AR4 WGII recognises the inclusion of the IPCC reports within Bassett and Fogelman's conceptualisation of the climate change literature as well as allowing us to highlight the benefits of systematic review approaches whilst bounding the search for the purpose of this critical review. This systematic methodology reveals that three of the journals selected by Bassett and Fogelman are in the top 10 of 'mainstream climate change adaptation' literature journals, yet so are *Climate Policy*, *Climate Research* and *Environmental Science and Policy* (see Table 1) amongst others. The findings produced using this method demonstrate the benefits of systematic review approaches to defining 'mainstream' climate change adaptation literature.

Table 1. Top 10 Journals. Those journals used in the search by Basset and Fogelman (2013) are highlighted.

Journals	WoK		IPCC		Mean Rank	Overall Position
	No. of Articles	Rank	No. of Citations	Rank		
Climatic Change	295	1	396	1	1	1
Global Environmental Change	170	2	183	3	2.5	2
Climate Research	123	3	77	5	4	3
Global Change Biology	114	4	127	4	4	3
Mitigation & Adaptation Strategies for Global Change	80	7	34	8	7.5	5
Climate Policy	54	10	25	12	11	6
Environmental Science & Policy	59	9	23	14	11.5	7
Oecologia	48	13	30	10	11.5	7
Forest Ecology & Management	83	6	15	21	13.5	9
Ecological Modelling	46	15	25	12	13.5	9
Agriculture, Ecosystems & Environment	43	20	36	7	13.5	9

Our revised, though still constrained, systematic methodology highlights that journals featuring highly cited works such as Burton et al. (2002), O'Brien et al. (2007), and Klein et al. (2005), with over 158, 83 and 56 citations respectively, published in *Climate Policy* and

[4] We recognise that one of the limitations of using the IPCC 2007 report is that it does not include any articles or journals published after 2006, therefore there is potential to repeat this approach following the publication of the IPCC AR5, due in 2014.

Environmental Science and Policy are currently omitted from the original search. We assert that including these additional journals within the classification would better represent the breadth of adaptation research, and may also reveal a different conceptualisation of adaptation, as found through Step 1.

In Step 3 we want to highlight that we recognise the limitations and bounds we set ourselves in Step 2 and that there remains scope to enhance our initial method to increase adherence to the principles for conducting systematic literature reviews through capturing journals beyond those cited in the IPCC and widening the search terms beyond only 'adaptation' (Ford et al., 2011, Berrang-Ford et al., 2011). We illustrate this by modifying the search within the original four journals to the term 'adapt*', and captured 138 more articles than the 563 originally found. Through just this one example of varying the search term within the original four journals we see numerous additional articles. Whilst this was only a slight variation of one term, it is crucial that search terms are broader to capture the inconsistency and variation in the terminology employed within climate change adaptation research (Pearce et al., 2011, Hofmann et al., 2011). Adaptation has been defined as 'involve[ing] changes in social-ecological systems in response to actual and expected impacts of climate change in the context of interacting nonclimatic changes' (Moser and Ekstrom, 2010: 22026). Climate change is thus not the sole driver of adaptation, but is one of the contributing factors (Berrang-Ford et al., 2011), as observed within studies that have examined adaptation to multiple stresses (Osbahr et al., 2008, Silva et al., 2010). Other factors driving adaptation can include institutional changes, shifts in governance structure, changes in livelihoods strategies, political changes, economic pressures and many more. Focusing solely on narrow search terms within the climate change literature is thus insufficient in generating an accurate representation of the complex and extensive research basis. It remains necessary to be more inclusive in the journal searches in order to capture the huge variety of research in the adaptation field that may lie beyond the climate change literature.

In aspiring to provide the best possible understanding of the evidence base and current knowledge in order to support effective and efficient policy-making, the research community should be making the best use of the tools available. Are systematic literature reviews a panacea for better understanding the field of adaptation? If only it were that simple. Adaptation terminology is far from consistent (Pearce et al., 2011, Hofmann et al., 2011). A plethora of terms are used to discuss human adaptation to climate change, including for example, 'resilience', 'risk management', 'coping capacity' or 'vulnerability' , but 'adaptation' as a term itself is also extensively used to discuss natural adaptations of different species to changing

environmental conditions in research areas, such as botany, ecology, agronomy, biology, and forestry to name but a few. How we define climate change adaptation and select the relevant words or concepts to describe this heterogeneous research field will thus impact the findings a systematic review will yield. Examples from recently published work can be used to highlight that research on livelihood changes as a response to climate impacts (e.g. Moritz, 2013) or changes in human resilience to a multitude of stresses including climate impacts (e.g. Hay, 2013) maybe missed when constricting one's literature search to 'adaptation' but would be included if search terms are broadened to include 'livelihood' or 'resilience'. If our own interpretation of adaptation thus does not include notions such as resilience, vulnerability or risk management, our search for relevant adaptation literature may not be sufficiently comprehensive and inclusive. Therefore we must be explicit about any predefined conceptions and interpretations of the research field that we have that may lead to bias in our selection of relevant literature (Rudel, 2008).

Bassett and Fogelman sought to identify whether the conceptualisation of adaptation had been enriched by the political economic critique and concluded that there is a lot of déjà vu and a little bit of something new to be found in the literature on human adaptation to climate change. The methodological approach we have taken in this response suggests that there could be more of 'something new' if the literature searched to conceptualise and understand adaptation is broadened to reflect the expanse of current adaptation research. The dynamic concept of adaptation to climate change is evolving as the body of research expands rapidly, and its boundaries within the climate change literature remain highly fluid and somewhat fuzzy. Systematic reviews can be a valuable tool in this context to comprehensively review a wide ranging and growing literature from which to understand changes to existing concepts, meaning and terminology as well as limits and barriers. By doing so, a foundation is created upon which more effective evidenced-based policy-making can be achieved. Adaptation to climate change is a highly policy relevant field and policy needs up to date and timely information for it to be effective. If adaptation policies do not take full account of the complexity of the adaptation concept, adaptive measures may be less efficient and effective and can potentially lead to maladaptation. Thus, if adaptation research is to effectively permeate into the policy sphere, then we should encourage discussion on how we can utilise or develop existing tools for the purpose of better understanding climate change adaptation research.

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