CORRESPONDENCE:

Boundary work

To the Editor — Extending the debate on interactions between climate science and policy, Morecroft *et al.*[1] provide a useful view from those who advise policymakers and environmental managers. Their point about turning policy into practice more often should be welcomed as part of a plan to communicate tangible examples of success, and 'good news' stories, to policymakers. This is particularly vital in light of Viner and Howarth's Commentary[2], which highlighted the lack of practitioners' knowledge in IPCC reports.

In combination with my recent Commentary[3], these contributions warrant a careful unpacking of the concept of 'boundary work'. In the context of enhancing the impact of climate science, boundaries may briefly be described as 'socially constructed and negotiated borders between science and policy'[4]. Whilst researchers in science and technology studies originally tended to use boundary work in a defensive sense, where scientists keep out disciplines considered to be unscientific[5], later scholars recognize the fluidity of a boundary, arguing that its position can be constructively coordinated[6]. Although not assessed in detail here, the concept of boundary work holds much resonance for climate scientists struggling to reconcile their role in policy negotiations.

Morecroft *et al.*[1] seem to argue for the maintenance of the scientific boundary, rigidly defending the traditions and methods of science against calls to be policy prescriptive. To keep the boundary between science and policy firmly in place, the authors suggest improving communication of science to non-experts, yet this is precisely what I contend is inadequate in isolation[3].

I argue that policymakers widely understand the threat of climate change, but find it difficult to forge a policy agenda purely based on this realization in the midst of competing concerns. In my Commentary[3], I promoted a constructive approach to boundary work: specifically, I suggested moving beyond merely defending scientific and technical rigour (which of course remains important), and called for the production of policy-relevant science. In doing so, I was clear to point out that better communication of knowledge alone is rarely influential, as the relationship between science and policy is seldom linear.

Researchers in science and technology studies recognize that constructive boundary work might sit uncomfortably with other scientists[7], particularly those who consider that an inherent paradox results from promoting evidence to policymakers[8]. Whilst acknowledging that there is a fine line between brokering, advocacy and being prescriptive[9], I argue for a close engagement with the concept of boundary work from the scientific community. Further empirical testing and engagement with this topic will help illuminate more clearly what the role of the modern scientist should be in relation to policy formation, a question that has not been adequately answered thus far[10]. ❐

References

1. Morecroft, M. D., Crick, H. Q. P., Duffield, S. J., Macgregor, N. A. & Taylor, S. *Nature Clim. Change* **4,** 842–843 (2014).
2. Viner, D. & Howarth, C. *Nature Clim. Change* **4,** 848–850 (2014).
3. Rose, D. C. *Nature Clim. Change* **4,** 522–524 (2014).
4. Cash, D. *et al. Salience, Credibility, Legitimacy and Boundaries: Linking Research, Assessment, and Decision-Making* (Faculty Research Working Paper Series, John F. Kennedy School of Government, 2002).
5. Gieryn, T. *Am. Sociolog. Rev.* **48,** 781–795 (1983).
6. Bijker, W. E. *et al. The Paradox of Scientific Authority: The Role of Scientific Advice in Democracies* (MIT Press, 2009).
7. Jasanoff, S. in *Future Directions for Scientific Advice in Whitehall* (eds Doubleday, R. & Wilsdon, J.) 62–68 (Univ. Sussex, 2013).
8. Pullin, A. S. & Knight, T. M. *Environ. Evid.* **1,** 15 (2012).
9. Spierenburg, M. *GAIA* **21,** 125 –134 (2012).
10. Sutherland, W. J. *et al. PLoS ONE* **7,** e31824 (2012).

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CORRESPONDENCE:

A new social contract for the IPCC

To the Editor — Castree *et al.*[1] call for a new social contract that rethinks global environmental change research. Their "new intellectual climate" would encompass a deeper analysis of societies affecting and affected by global environmental change, as well as incorporating the often-overlooked focus of environmental humanities research on issues of values, rights, perceptions, trust and fear, among many other topics. These innovations hinge on a richer, more invigorated engagement of the environmental social sciences and humanities in global environmental change research, thereby yielding more diverse understandings and perspectives of Earth systems. Castree *et al.* make excellent points, but their recommendations are unlikely to trigger changes in the climate change community without fundamental restructuring of the IPCC.

Disciplinary bias and organizational structure of the IPCC Working Groups for the Fifth Assessment Report (AR5) tend to inherently divide (rather than couple) natural and human systems. They are also dominated by natural scientists, while the humanities are almost entirely absent, and the participating social scientists are predominantly economists. The three IPCC Working Groups (WGI=science/nature;WGII=science/society; and WGIII = economics/policy) do not promote integrative, transdisciplinary approaches in line with more than a decade of research on coupled natural–human systems or social–ecological systems[2,3]. Instead, the structure separates nature from culture and privileges the natural sciences by making WGI solely about the physical science basis, authored predominantly by natural scientists. This arrangement will not yield the new intellectual climate Castree *et al.* promote. It also ignores previous pleas, including those in this journal[4], that call for more humanities in global environmental change research, that critique the IPCC's physical science and