The latest edition of *Nature* has an interesting article and accompanying commentaries (freely available here; longer version of the principal article here) on the concept of boundaries, or limits, or thresholds if you prefer, for the planet. The principal article, which has 27 authors led by Johan Rockstrom of the Stockholm Resilience Center, is called “A Safe Operating Space for Humanity.” It purports to identify and quantify “planetary boundaries that must not be transgressed.” The basic idea is that humanity will be “safe” so long as we maintain environmental conditions within the relatively stable boundaries observed during the Holocene. If conditions escape that range, the authors worry, they might reach irreversible tipping points, shifting into a new, inhospitable state.

Their paper identifies nine earth systems or processes “which, if crossed, could generate unacceptable environmental change.” For three of those — climate change, biodiversity loss, and global nutrient cycles — they think dangerous thresholds have already been crossed. Others — ocean acidification, freshwater use, and changes in land use — are getting close. Thresholds can’t yet be definted for atmospheric aerosol loading and chemical pollution, leaving stratospheric ozone depletion as the only important threshold on which the authors think we’re reasonably safe (thanks to the Montreal Protocol).

I think I understand the authors’ motivation. They see a world in crisis, and people not paying attention. Thresholds that mark the edges of a safe world for humanity are undoubtedly an attention-grabber, and a good sound-bite way to identify policy goals.

Although I sympathize, I think this kind of high-profile but simplistic celebration of thresholds may do more harm than good. What constitutes an “unsafe” world for humanity is at least in part a matter of how people want to live and what they want from the world around them, not to mention how risk-averse they are. The authors of this paper don’t acknowledge that there might be multiple views on what changes matter for humanity and why, so they don’t discuss in detail how they arrived at their views of where most of the key thresholds lie. (The exception is climate change; where they argue that atmospheric CO2 must be stabilized at 350 ppm to avoid risk of feedback processes that might produce unexpectedly high temperature increases, and to prevent loss of polar ice sheets.) They do confess that they are making conservative assumptions and ignoring many layers of uncertainty, but they present their results in such a way that the quantitative thresholds can easily be picked up without the accompanying uncertainty.

For biodiversity, for example, the authors admit that setting a boundary is a challenge. So, as “a very preliminary estimate,” they pick a level of no more than 10 times the background extinction rate over some unspecified time scale. That’s a complete shot in the dark, but it is then presented as a firm limit on human activity, with the strong suggestion from the context that its essential to human survival, although the authors don’t directly make that claim.

I’m sympathetic to the ends the authors want to achieve, but I don’t think this is a good way to go about it. It smacks of manipulation, of trying to fool people who don’t share the authors’ implicit goal of strong nature protection into supporting the authors’ preferred policies. That’s not likely to be a sustainable campaign tactic. Worse, by so facilely identifying the uncrossable boundaries, the authors may be missing an important opportunity for public education. It’s much harder, but would be much more valuable, to grapple with the tough questions rather than picking numbers more or less out of thin air and then turning them into fancy graphics. For biodiversity, that would mean actually trying to understand the myriad ways that biodiversity is important to people. That deserves more than vague references to ecosystem services and resilience, and it requires giving other people, including non-scientists, a voice in the debate.

So how useful is it to talk about boundaries? It’s useful in a general sense, to remind people that the world is indeed finite. It’s useful to highlight uncertainties and risks, so that those can be accounted for in decisions. And perhaps it can stir people to action. But boundary talk creates its own serious risks — it can inhibit an important part of the conversation about why exactly human activities are problematic, and by leaving most people out of that conversation it may increase their resistance to any solutions. Those who talk about boundaries have an obligation not to oversimplify, even if that means that the sound bite doesn’t play as well.