

Letter

Transparency and Control of Autonomous Wildness: A Reply to Galaz and Mouazen

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Galaz and Mouazen [1] argue that autonomous curation of wild places requires ‘algorithmic transparency, accountability, and public deliberation’. We completely agree. These are requirements for any fair and sustainable social endeavor, with or without algorithms. All conservation and design projects should meet these standards for open operation and stakeholder participation [2].

Nevertheless, we are unconvinced by their claim of a ‘new wilderness paradox’ in which increasingly automated curation of wild places produces a ‘stronger need for human supervision’. It is true that deep reinforcement learning systems can learn to do surprising things – many of them with undesirable outcomes. Yet the same is true of many well-intentioned human efforts to manage environments, like the once-common strategy of suppressing fires and other disturbances [3]. It is hard to see why the issues of bias and discrimination highlighted by Galaz and Mouazen are any different in automated systems than in those of any other human enterprise.

Autonomous curation of wild places is a risky social–ecological experiment with the potential for unexpected outcomes,

both positive and negative. As with any experiment with potential for negative societal consequences, from self-driving cars to the reintroduction of wolves to the automated curation of wild places, it is essential to engage stakeholders, including the public, in transparent processes of governance in every phase of operation, from initial design to implementation, monitoring, and adaptive management [2]. But there is no reason why designed autonomy cannot incorporate such governance, and every reason why it should.

There are good reasons to be concerned by the loss of wildness and wilderness in the Anthropocene [4]. Yet demands for and on wild nature are increasing at the same time that cultural conceptions of these are expanding [5]. Through experiments in designed autonomy, much might be learned about the limits to human control of wild places and about the potential of wildness and wilderness to evolve far beyond these, even within the increasingly human biosphere of the Anthropocene.

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References

- Galaz, V. and Mouazen, A.M. (2017) ‘New wilderness’ requires algorithmic transparency: A response to Cantrell *et al.* *Trends Ecol. Evol.* 32, 628–629
- Sterling, E.J. *et al.* (2017) Assessing the evidence for stakeholder engagement in biodiversity conservation. *Biol. Conserv.* 209, 159–171
- Turner, M.G. (2010) Disturbance and landscape dynamics in a changing world. *Ecology* 91, 2833–2849
- Ellis, E.C. (2015) Ecology in an anthropogenic biosphere. *Ecol. Monogr.* 85, 287–331
- Kowarik, I. (2017) Urban wilderness: supply, demand, and access. *Urban For. Urban Green.* Published online June 3, 2017. <http://dx.doi.org/10.1016/j.ufug.2017.05.017>

Letter

Searching for Win–Win Archetypes in the Food–Biodiversity Challenge: A Response to Fischer *et al.*Ralf Seppelt,^{1,2,3,*}
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There is no doubt about the urgent need to revise the current framing of the food–biodiversity challenge. Fischer *et al.* [1] make the laudable effort to conceptualize four archetypes of the biodiversity conservation and food security relation with examples from the global south. We applaud the authors for refraining from the frequently applied logic that a substantial increase in food production is needed to achieve food security and for suggesting a more nuanced conceptual narrative.

However, we would like to point out some concerns related to the ambiguity of the terms used, the realism of the proposed archetypes and the potential of the framework to identify how systems can be triggered to transition from one archetype to another.

First, rethinking the biodiversity–food security narrative requires a precise use of terms. The term ‘food security’ is multifaceted and encompasses, for example, food production, food sovereignty and nutrition. However, the framework the authors propose in their Figure 1 implies that food security is measurable as a one-