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<http://dx.doi.org/10.1016/j.tree.2013.05.006> Trends in Ecology & Evolution, August 2013, Vol. 28, No. 8



Global sustainability versus the Malthusian–Darwinian dynamic: a reply to Rull

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Although the comments by Rull are interesting [1], they miss the intent and main point of our paper [2], which are to show how the Malthusian–Darwinian dynamic (MDD) applies to global human ecology and may limit viable sustainability options. Rull is correct that many of the facts and interpretations presented in our paper have been made by others. We are aware of and have cited most of these across our various human macroecology papers [3–5]; it is important to also realize that Science & Society Forum pieces in *TREE* are capped at 15 references, and thus this work cannot and should not be seen as a comprehensive review of the subject.

We strongly feel that the issues raised by the MDD in relation to the sustainability of modern human culture should be brought to the fore because the pervasive influence of our biological heritage has not usually been considered, especially by social scientists.

Although we do indeed state that ‘humanity has not yet evolved the genetic or cultural adaptations needed to accomplish these tasks’, we are confused as to why Rull assumes that this statement implies that our belief is that

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such adaptations are inevitable, and then invokes Judeo-Christian principles in doing so. Nothing in evolutionary theory suggests this interpretation. Rather, we simply make the factual statement that human society has not at this time developed the adaptations required to place the overall good of the species above the selfish desires of individuals, families, and social groups. Although such traits may have been adaptive in the past, they are no longer advantageous in our ‘now full world’ [2].

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Focus Issue: Overconfidence and deception in behaviour

Unbiased individuals use valuable information when making decisions: a reply to Johnson and Fowler

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In their letter to *TREE*, Johnson and Fowler (J&F) [1] raise several issues relating to our criticism [2] of their model of the evolution of overconfidence [3]. Most of these are distractions and misinterpret our fundamental criticism, that

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cognitive biases arise in their model simply because individuals have to be biased to take account of unequal costs and benefits of different decision outcomes.

Their substantive points are that: (i) Bayesian decision-making is unrealistic in nature and, hence, heuristics are