



1 Beyond the Tail, Staying with the System

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12 Dear Land Systems Colleagues,

13 We are excited to introduce the section “*Letters to and from early career scholars*” as part
14 of our new journal. This section is inspired by earlier initiatives of senior scholars offering
15 guidance to the next generations from Ivan Pavlov’s 1936 letter to young scientists in
16 *Science* (Pavlov, 1936) to the more recent “*Letters to Young Scientists*” column. The
17 *Science* column started in 2018 but was sadly discontinued in 2022. It covered ground
18 from building a lab (Somerville et al., 2019) to navigating how to be an ethical scientist
19 (Cunningham et al., 2020).

20 We now see a clear gap that these earlier initiatives left open. With this section, we wish
21 to create a space for an open and honest conversation about navigating a career in a
22 highly interdisciplinary field like Land System Science. And we wish to do so by creating
23 a genuine dialogue rather than a one-way exchange. Thus, this section will feature letters
24 written *to* early career scholars on topics specific to navigating a career in Land System
25 Science, as well as letters written *from* you, sharing your own experiences and
26 perspectives with the field. We are excited to build this conversation together with the
27 Global Land Programme Early Career Network, and we invite you to help shape what
28 comes next.

29 **Single disciplines do not see the whole system**

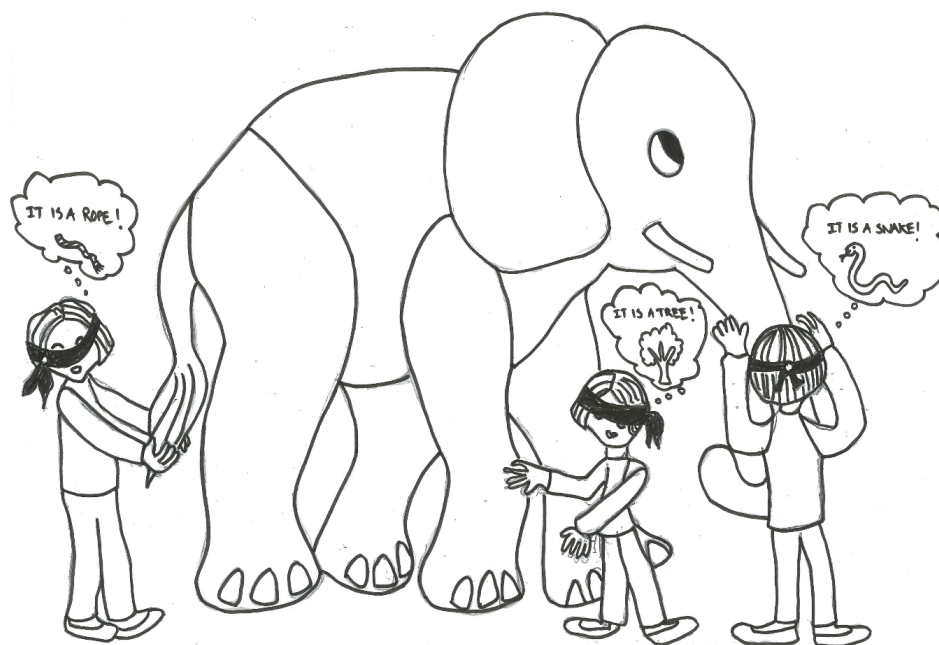
30 To open this conversation, we would like to respond directly to something raised in the
31 very first letter from Karim and Dubey, two early career scholars, in this section: the sense
32 of knowing everything and nothing at once that often comes with working across
33 disciplines. We recognize this discomfort, and we will try to offer a way of thinking about
34 it using an old image to make the case. Consider the parable of the blind men and the



35 elephant, each touching a different part and describing a different thing, whose origins
 36 trace back to ancient Indian folklore. It is usually told as a story about the limits of partial
 37 knowledge. We believe it can also describe how to navigate the sense of knowing
 38 everything and nothing at once as land system scientists.

39 The blind-men-and-the-elephant story in many ways shows why land system scientists
 40 have to become interdisciplinary. One cannot infer elephant behaviour from studying the
 41 tail alone, no matter how rigorously the tail is studied. In the same way, the behaviour of
 42 any socio-ecological system emerges from biophysical and social conditions,
 43 feedbacks, tipping points, and linkages between distant places through trade and land-
 44 use displacement (Meyfroidt et al., 2018). Land systems are dynamic, and their
 45 behaviour is the product of relations between the many different parts. It cannot be
 46 inferred from any single part of the system. As land system scientists, we have to
 47 recognize that this is not a limitation to apologize for. It is the very reason Land System
 48 Science exists as a field distinct from the disciplines that feed into it.

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51 *Fig. 1. The parable of the blind men and the elephant as an illustration of the limitations of partial knowledge*
 52 *and the need to bring together different perspectives when understanding land systems. Drawing: LV*
 53 *Rasmussen.*

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55 **Building frameworks to see the whole system**



56 Each discipline feeding into Land System Science touches a different piece of the same
57 land system and comes away with a different “true” description. An ecologist, a remote
58 sensing scientist or economist can each be doing rigorous, honest science. They are
59 simply constrained to the patch they can reach. None of them is wrong about what they
60 touched – but each perspective alone can only reveal part of what is needed to tackle
61 connected global crises. The recent Nexus assessment from the Intergovernmental
62 Platform on Biodiversity and Ecosystem Services (IPBES) is a case in point. In the
63 assessment, the authors call for approaches that link health risks, food and water
64 insecurity, biodiversity loss, and climate change – stating that separate efforts to address
65 these interdependent crises are simply ineffective and counterproductive (McElwee et
66 al., 2025). Thus, addressing these issues simultaneously depends on scientists
67 collaborating across disciplines. This is at the core of Land System Science and it is why
68 the field has pushed toward coupled human-environment frameworks (land systems,
69 telecouplings, socio-ecological systems). The goal is to get all hands describing the same
70 elephant at once from their unique perspectives, which is fundamental to seeing how
71 health risks, food and water insecurity, biodiversity loss, and climate change are
72 connected, and how to address them together.

73 **Interdisciplinary research is a collective, not an individual, achievement**

74 The sense of knowing everything and nothing at once may in fact be the correct
75 epistemological point of departure for truly interdisciplinary work on land systems and
76 connected global crises. This means developing real expertise in one component of the
77 system while deliberately, repeatedly identifying interactions with other components. It
78 also means recognizing that no one person can hold the whole elephant in their arms at
79 once.

80 Collaboration models like the GLP and the IPBES, which Karim and Dubey described in
81 their letter, may have found a way to see more of the elephant by structuring dialogue
82 between scholars who each hold a different part, rather than expecting any one of them
83 to see the whole thing alone. As such, the task or ambition of an early-career land system
84 scientist should be less about becoming the person who sees everything, and more
85 about learning to combine their partial view with those of others. This skill is as much
86 about the research process and humility as about accumulating ever more personal
87 expertise. And it is perhaps one of the biggest challenges in truly interdisciplinary
88 research: How to actually integrate across fields and disciplines? How to integrate across
89 different spatial scales such as the landscape, household, farm, field, or even plot level—
90 and perhaps also across different time scales? And, importantly, how to do so while
91 navigating the many other demands of a PhD, including limited time and the pressure to
92 publish? This is surely not something a PhD student can or should do alone. While we
93 have seen the value of taking part in larger interdisciplinary networks in our own
94 experience, they are not the only path to collaboration. It can start much smaller:



95 discussing a problem with someone from another field, asking how they would approach
 96 it, or working together on a small piece of a larger question. It may, in fact, start by
 97 embracing the discomfort of not seeing the whole.

98 So our advice is not to avoid the tail. It is this: know which part of the elephant you are
 99 holding, say so explicitly, actively seek out people holding other parts, and treat the
 100 moments of discomfort or confusion as evidence that you are working towards seeing the
 101 whole land system and all the entailed complexities.

102 Later in your career, this means staying aware of where your own view of the elephant
 103 runs out, and building a lab deliberately around people whose expertise fills exactly those
 104 gaps. In that way, the lab group can together see more of the elephant than any one
 105 person could alone. And, of course, not everyone holding a part of the elephant will be a
 106 scientist. Bringing other actors into the conversation raises another set of questions
 107 about which parts of the system matter to whom, how to make connections and trade-
 108 offs visible, and what happens when different objectives cannot be easily reconciled.
 109 These questions may well deserve a letter of their own!

110 We look forward to launching this new dialogue on how to navigate a career within a
 111 highly interdisciplinary field such as Land System Science. We invite you to help shape
 112 what comes next through both the “*Letters to early career scholars*” and “*Letters from*
 113 *early career scholars*” sections.

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115 REFERENCES

- 116 Cunningham, W.A., Van Bavel, J.J., Sommerville, L.H., 2020. How to be an ethical
 117 scientist. *Sci. Lett. Young Sci.* DOI: 10.1126/science.caredit.abe1882
- 118 McElwee, P.D., Harrison, P.A., van Huysen, T.L., Alonso Roldán, V., Barrios, E., Dasgupta,
 119 P., DeClerck, F., Harmáčková, Z., Hayman, D.T., Herrero, M., 2025. IPBES nexus
 120 assessment: Summary for policymakers. DOI: [10.5281/zenodo.13850289](https://doi.org/10.5281/zenodo.13850289).
- 121 Meyfroidt, P., Chowdhury, R.R., de Bremond, A., Ellis, E.C., Erb, K.-H., Filatova, T.,
 122 Garrett, R.D., Grove, J.M., Heinimann, A., Kuemmerle, T., 2018. Middle-range
 123 theories of land system change. *Glob. Environ. Change* 53, 52–67.
 124 <https://doi.org/10.1016/j.gloenvcha.2018.08.006>
- 125 Pavlov, I., 1936. Bequest of Pavlov to the Academic Youth of His Country. *Science* 83,
 126 369–370. <https://doi.org/10.1126/science.83.2155.369>
- 127 Somerville, L.H., Cunningham, W.A., Gruber, J., Van Bavel, J.J., Lewis, N.A., 2019. Three
 128 keys to launching your own lab. *Sci. Lett. Young Sci.* DOI:
 129 10.1126/science.caredit.aaz1327

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