

Interactive comment on “Constructal theory of pattern formation” by A. Bejan

Anonymous Referee #3

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This paper is a brief report of number of published results on generation of flow configuration based on the Constructal Law. The key idea in this paper is that flow configuration can be derived from principle, i.e. on a deterministic basis, and this is being really confirmed in an increasing number of cases. Constructal law calls for flow organization in order to lower global resistances or, in equivalent formulation, to achieve equilibrium the fastest. We can discuss how to apply this principle to real systems but it appears that the principle itself is a law of nature. Unlike the Second Law that calls for maximization of entropy under the existing constraints, the Constructal Law applies to systems far from equilibrium and calls for the flow architecture that minimizes flow resistance such that systems achieve equilibrium the fastest. Despite its deterministic nature the constructal law acts on a real world, in which matter is distributed randomly therefore generating flow patterns that do not coincide with perfect geometric shapes. However, their scaling laws and geometric forms can be derived from principle. I be-

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lieve that this paper will interest readers aiming at understanding generation shape and structure everywhere. Even though the paper is very general and I suggest the author to stress that it has to be considered as an introduction to Constructal Theory and therefore to redirect readers to more substantial work that has been published so far. I have only one technical point: I suggest the author to check the r.h.s of eq. (2), which in my view, must read: $(L_0/D_0^2 + H_0/KL_0)$. In page 1788, line 24, please correct also the typo “Flud”

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 1773, 2006.

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