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Novelty and the Structure of Design Landscapes: A Relational View of Online Innovation Communities

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Abstract

Design artifacts in online innovation communities are increasingly becoming a primary source of innovation for organizations. A distinguishing feature of such communities is that they are organized around design artifacts, not around people. The search for novel innovations thus equates to a search for novel designs. This is not a trivial problem since the novelty of a design is a function of its relationship to other designs, and this relationship changes as each design is added. These relations between artifacts affect both consumption and production. Moreover, these relations form a landscape whose structure affects the emergence of novelty. We find evidence for our theorizing using an analysis of over 35,000 Thingiverse design artifacts. This work identifies the differential effects of different forms of novelty, visual and verbal, on subsequent innovation, and identifies the differential effects of different degrees of structure in the landscape on novelty.

Keywords: Novelty; design landscape; visual novelty; verbal novelty; structure; search; online innovation community; innovation; design artifacts; 3D printing