On extensions of transitive maps and their topological entropy

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For a homeomorphism f of a compact metric space X we consider the class $\mathcal{F}_f$ of all its triangular extensions $F = (f, g_x)$ on the space $X \times [0, 1]$ which have the property: every fibre map g_x is increasing homeomorphism of $[0, 1]$. Every map in $\mathcal{F}_f$ has the same topological entropy as f.

For the case of minimal f we describe the closure of all transitive maps in $\mathcal{F}_f$.

Using similar ideas we generalize the result proved in [Ll. Alsedà, S. F. Kolyada, J. Llibre, Ľ. Snoha, Entropy and periodic points for transitive maps, Trans. Amer. Math. Soc. 351 (1999) 1551-1573]. Namely we prove that every transitive selfmap of a compact metric space X can be extended to a triangular transitive map on $X \times [0, 1]$ without increasing the entropy.