The circularity of the urban ecosystem material productivity: The transformation of biomass into technomass in Southern Patagonia

Inostroza L.

Cities are vortex of the anthropogenic accumulated matter: technomass. The urban metabolism captures ecological stocks from other ecosystems to produce technomass in a complex process involving stocks and fluxes, energy and information. As such, the physical development of cities is entangled with the material productivity of other ecosystems, where ecological stocks are appropriated and finally accumulated in the urban tissue after several transformations. The appropriation and accumulation of stocks are essential for the reproduction of the urban material structure. The appropriation of ecological stocks from other ecosystems is an iterative process generating particular urbanisation patterns. This paper analyses the spatial evolution of livestock activity and rising urban development as a metabolic relationship between two ecosystems located in Southern Patagonia, Chile: the steppe ecosystem and the urban ecosystem of Punta Arenas. This relationship leaves behind deep footprints in the urban tissue, in the form of splendid architecture arising from ecosystems? appropriation. The architectural sedimentation found in the urban tissue of Punta Arenas is linked to the depletion of the steppe ecosystem's ecological stocks. The Patagonian pastureland and the bourgeois architecture of Punta Arenas are the initial and terminal phases of a complex process of appropriation; the beginning and the end of a metabolic chain where biomass is transformed into technomass. The stocks are ecological at the origin and become, through socio-economic transformation, material sedimentation.

Ecosystem's metabolism

Region of Magallanes

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Agriculture

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