Assemblée Générale SoDUCo

Propositions pour le WP3

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Définition de la co-évolution

Objets : Villes et territoires (*Théorie Évolutive des Villes*) qui co-évoluent avec les réseaux de transport (*Théorie Territoriale des Réseaux*)

Processus :

Une définition de la co-évolution à trois niveaux :

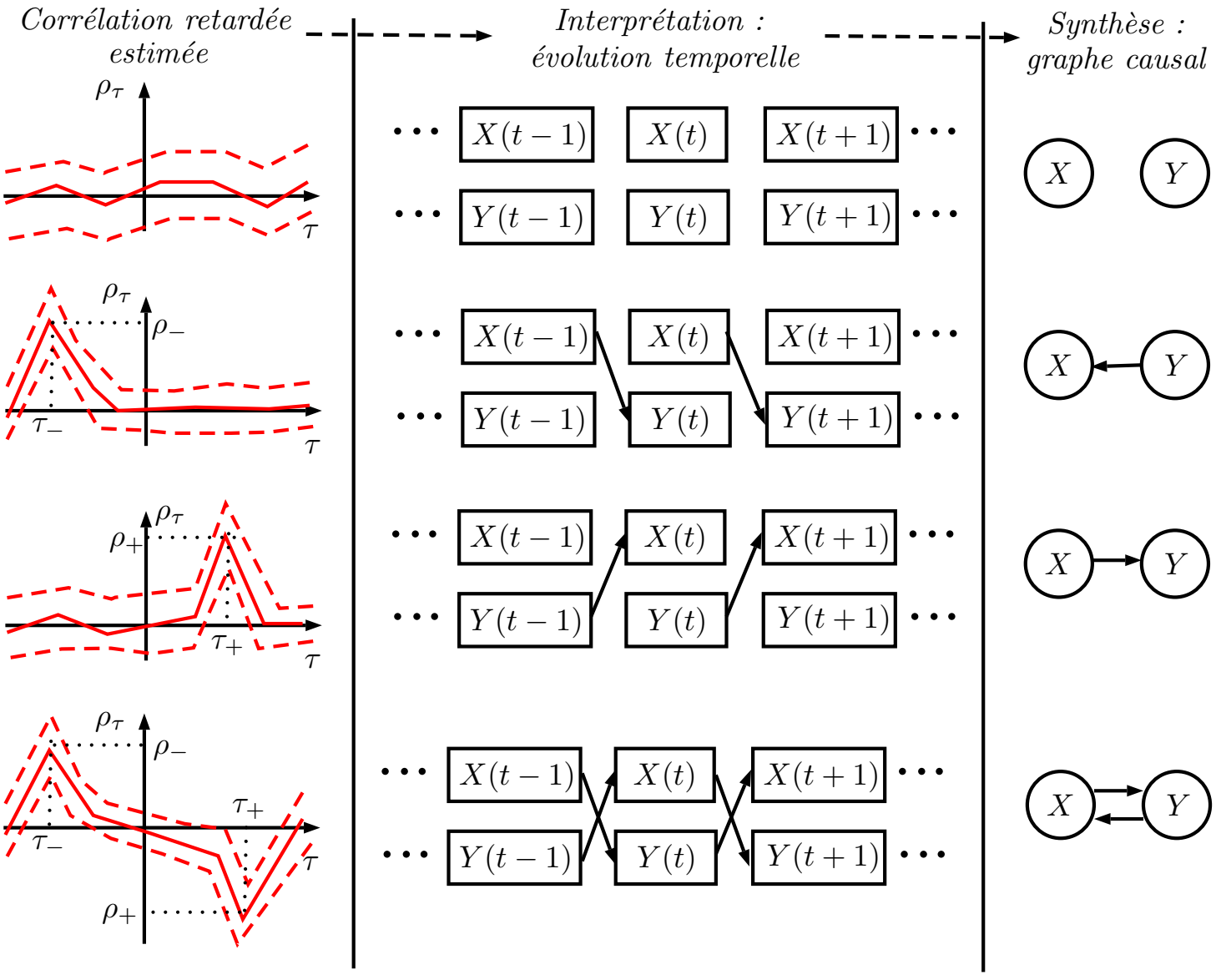
1. niveau des agents
2. niveau des populations d'agents (niches)
3. niveau global du système

Entrées :

1. Entrée empirique (niveau microscopique)
2. Entrée par la morphogenèse (niveau de la niche)
3. Entrée par la théorie évolutive (niveau global)

Raimbault, Juste (2019). Modeling interactions between transportation networks and territories: a co-evolution approach. arXiv preprint arXiv:1902.04802.

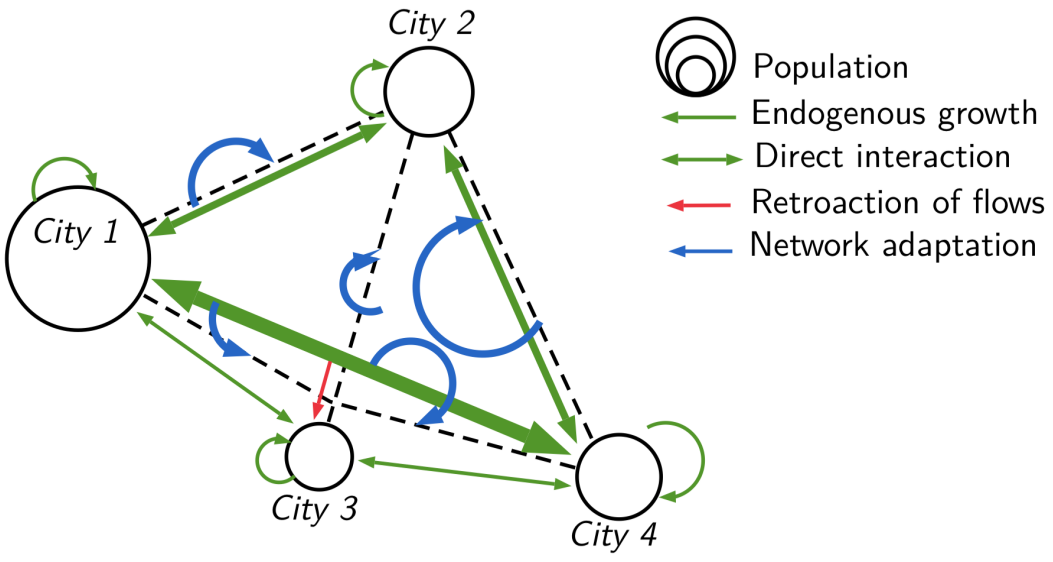
Méthode de caractérisation de la co-évolution

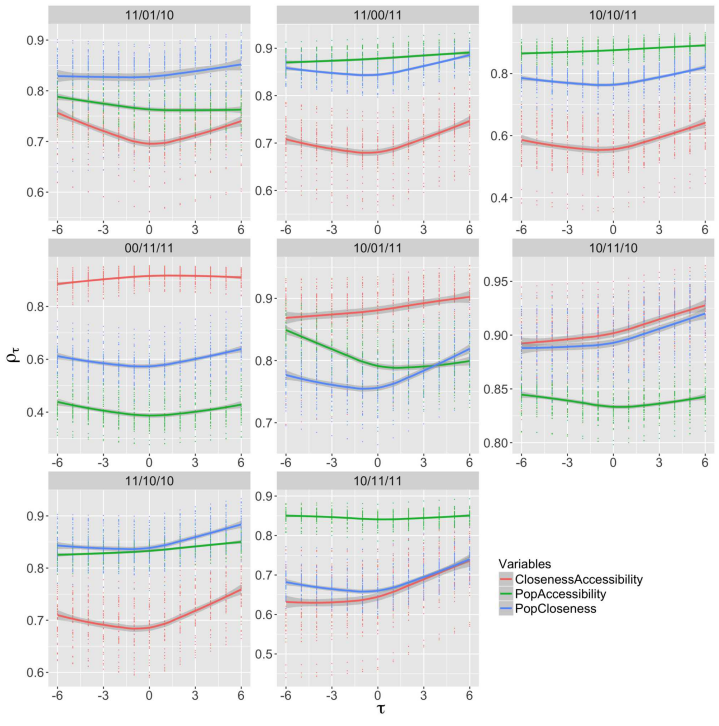


Raimbault, J. (2017). Identification de causalités dans des données spatio-temporelles. In Spatial Analysis and GEOmatics 2017.

Modèles macroscopiques de co-évolution

Modèle d'interaction pour les systèmes de villes incluant l'évolution du réseau; production de multiples régimes de co-évolution et calibration pour la France (1830-2000).





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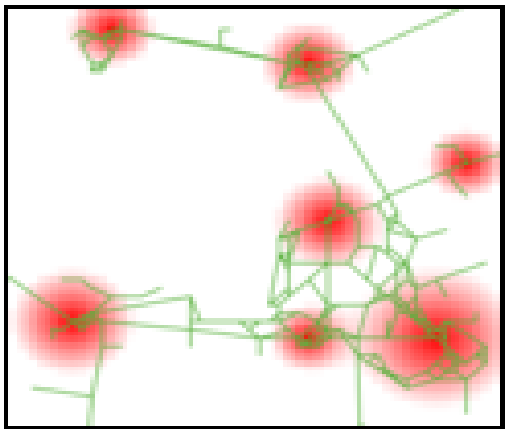
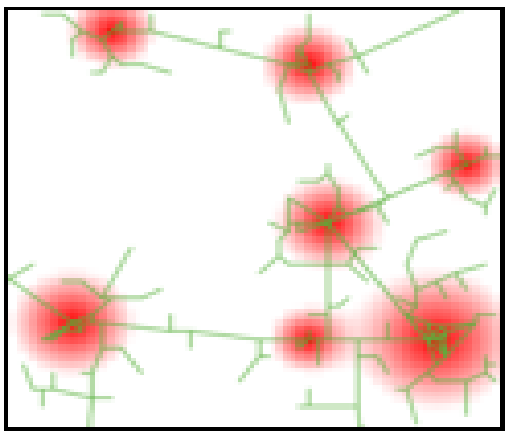
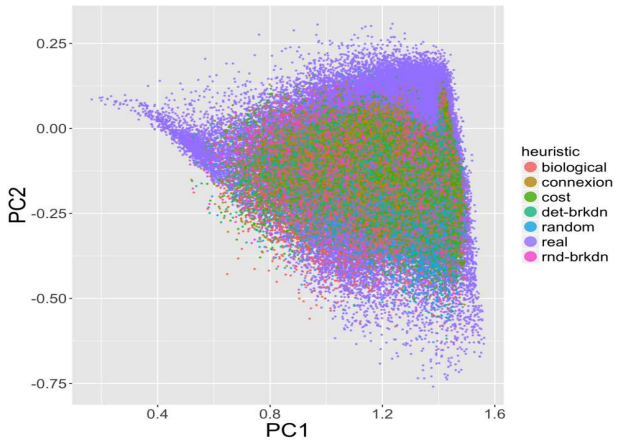
Raimbault, J. (2022). Hierarchy and co-evolution processes in urban systems, forthcoming in Fen-Chong J., ed., *Centralities and Hierarchy of Networks and Territories*, ISTE Editions. arXiv:2001.11989

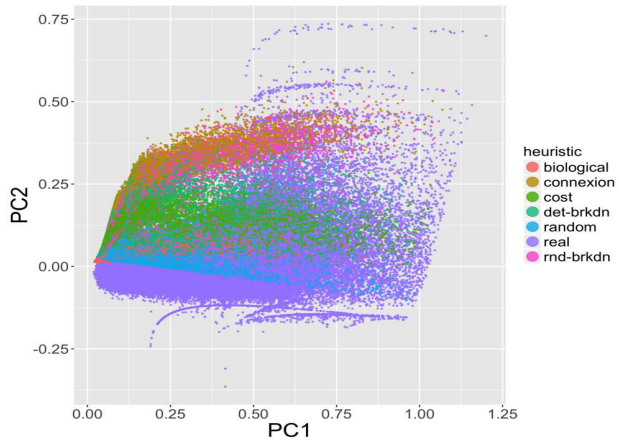
Modèles mésoscopiques de co-évolution

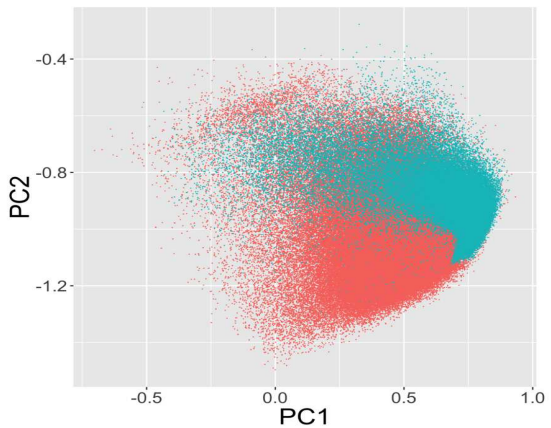
Modèle par réaction-diffusion et multi-modélisation de la croissance du réseau : complémentarité des heuristiques, calibration sur les formes et leurs corrélations

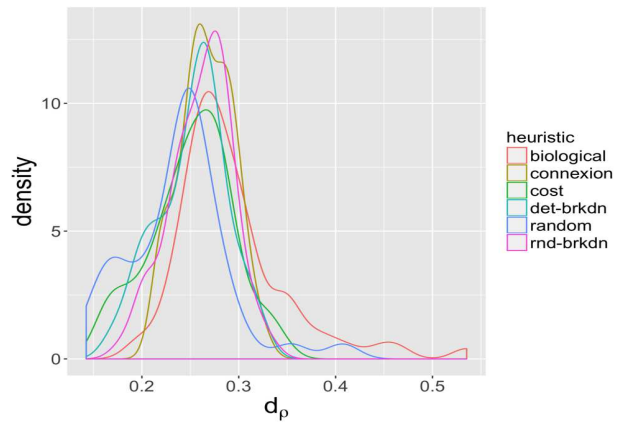










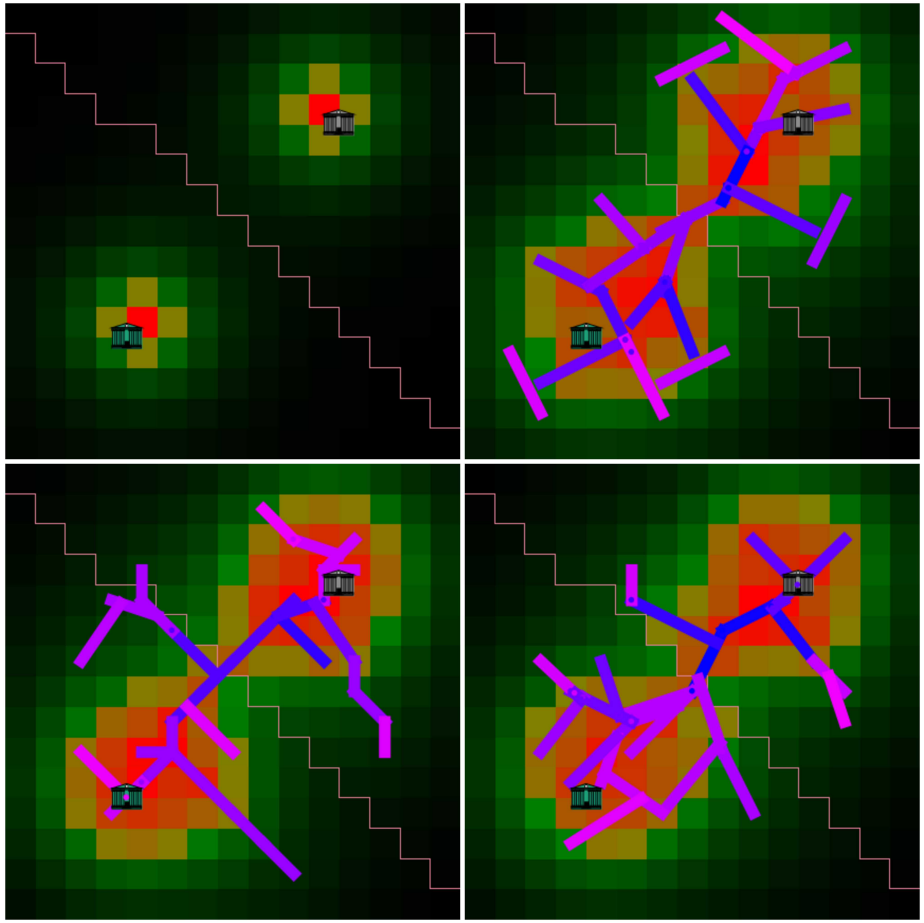


Raimbault, J. (2018). Calibration of a density-based model of urban morphogenesis. PloS one, 13(9), e0203516.

Raimbault, J. (2018). Multi-modeling the morphogenesis of transportation networks. In Artificial Life Conference Proceedings (pp. 382-383). MIT Press.

Raimbault, J. (2019). An urban morphogenesis model capturing interactions between networks and territories. In The mathematics of urban morphology (pp. 383-409). Birkhäuser, Cham.

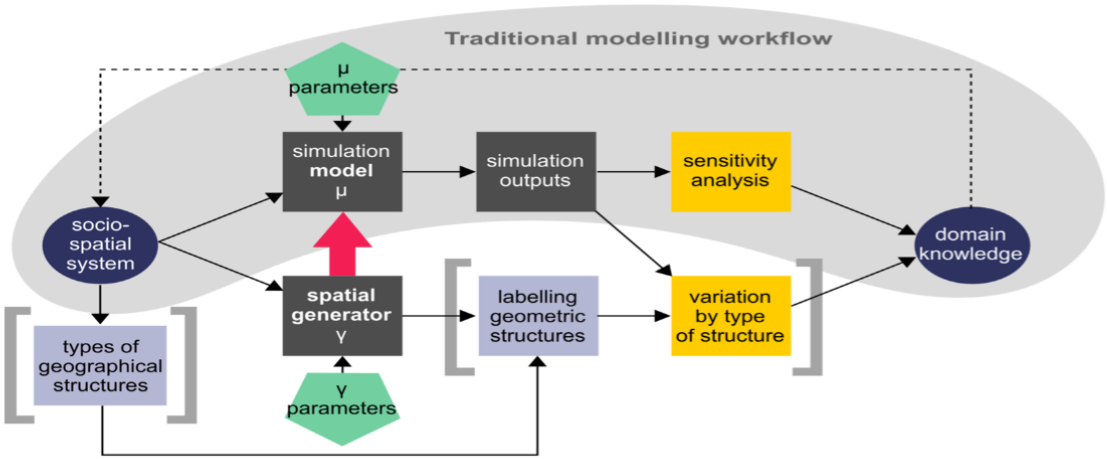
Co-évolution et gouvernance des transports



Simulation de l'impact des décisions d'acteurs de la gouvernance des transports

Raimbault, J., & Le Néchet, F. (2021). Introducing endogenous transport provision in a LUTI model to explore polycentric governance systems. Journal of Transport Geography, 94, 103115.

Validation des modèles: analyse de sensibilité spatiale



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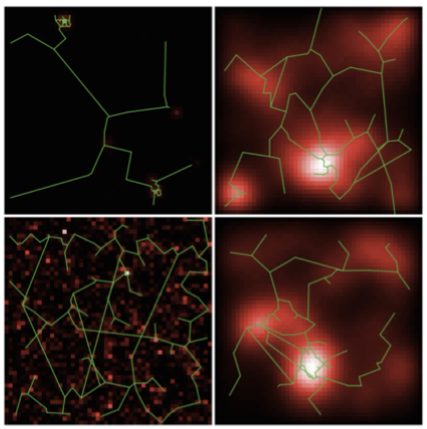
Raimbault, J., Perret, J., & Reuillon, R. (2020). A scala library for spatial sensitivity analysis. *GISRUK 2020 Proceedings, 32.*



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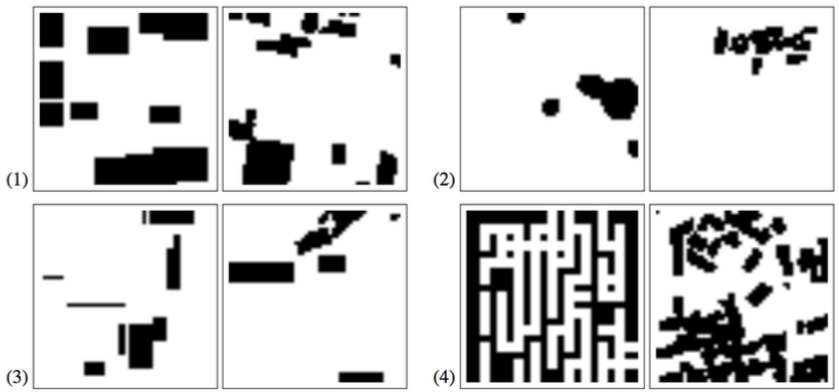

Raimbault, J., Perret, J. (2019). Generating urban morphologies at large scales. In *Artificial Life Conference Proceedings* (pp. 179-186).

Propositions pour le WP3

Méthodologique : comparaison de méthodes pour caractériser une co-évolution (inférence causale [Yao et al., 2021], diff-in-diff [Lechner et al., 2011], variables instrumentales [Baiocchi et al., 2014], contrôle synthétique [Ben-Michael et al., 2021], effets structurants [Bonnafous and Plassard, 1974])

Thématique : étude empirique de la co-évolution.
$\rightarrow$ *Objets ?* aménités - réseau routier ? diffusion de l'innovation ? [Bergeaud et al., 2017]
$\rightarrow$ *Echelles ?* intra-urbain / urbain ?

Modélisation : processus sous-jacents aux dynamiques urbaines et de réseau.
$\rightarrow$ *Echelles ?* urbain / inter-urbain ? Multiscalaire ? (données de GeohistoricalData)

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Baiocchi, M., Cheng, J., and Small, D. S. (2014).
Instrumental variable methods for causal inference.
Statistics in medicine, 33(13):2297–2340.


Ben-Michael, E., Feller, A., and Rothstein, J. (2021).
The augmented synthetic control method.
Journal of the American Statistical Association, (just-accepted):1–34.


Bergeaud, A., Potiron, Y., and Raimbault, J. (2017).
Classifying patents based on their semantic content.
PloS one, 12(4):e0176310.


Bonnafous, A. and Plassard, F. (1974).
Les méthodologies usuelles de l'étude des effets structurants de l'offre de transport.
Revue économique, pages 208–232.

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Lechner, M. et al. (2011).
The estimation of causal effects by difference-in-difference methods.
Now Hanover, MA.


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In *Spatial Analysis and GEOmatics 2017*.


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