Challenges raised by the implementation of topographic, anamorphic and shrivelled cartographic models as supports to human route selection tasks

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2) Properties of Geographical time-space
3) Representing Geographical Time-Space
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0. Problem statement

For decades, geographers enjoy criticising Euclidean (plane, distance) geometry

We can observe

1. The development of transport networks
2. An increase in speed
3. An increase of the range of speeds (plane $\leftrightarrow$ walking)

Geographical space gets more complicate (and hence its representation, its understanding, its cognition), particularly in the dialectic network-surface

Can we reconcile geography and geometry?

1. Geometry of Geography : Investigating geographical time-space

Geometry « Part of the mathematics concerned with the properties of space » (wikipedia)

Géography « Study of the lands, features, inhabitants, and phenomena of Earth » (wikipedia), with two major questions:

➔**Where** (are places)?

➔**At which distance** (from each other)?

Distance refer to movement between geographic places, and is mainly characterised by time (as a socially significant quantity Pumain 2009)

➔Geographical time-space : a geographical space associated to a time scale

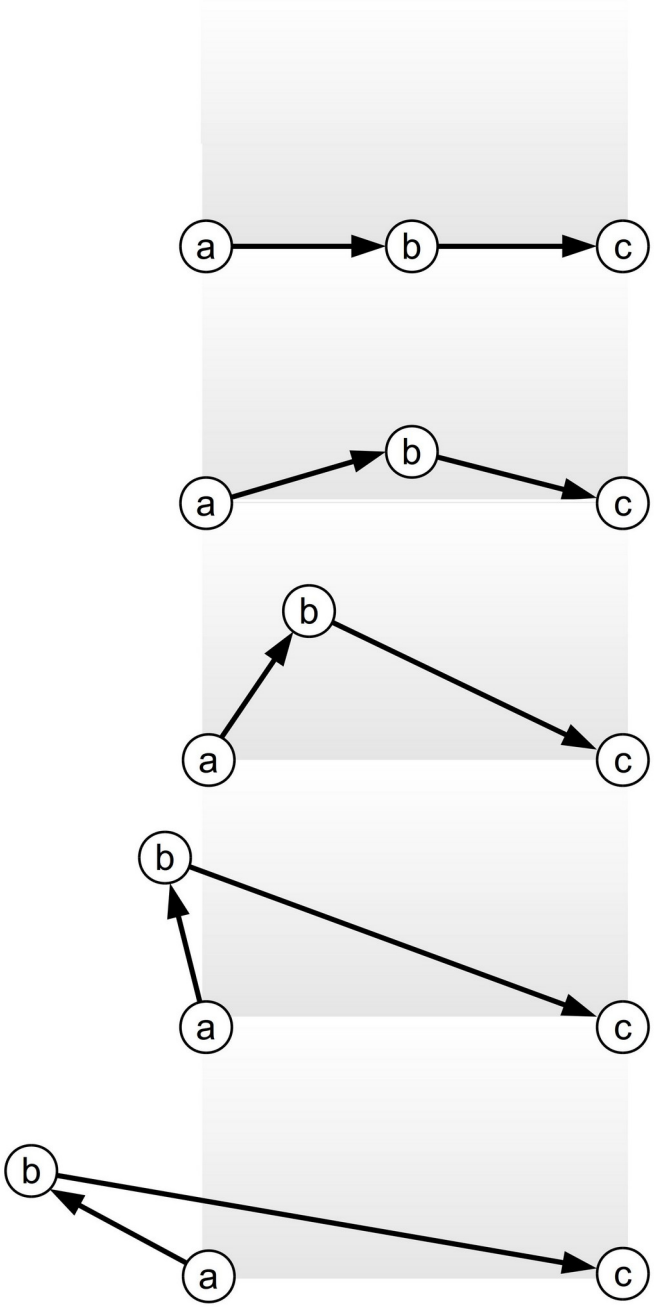
2. Properties of Geographical time-space

P1 **Acceleration** of movement, shrinking world

P2 Coexistence of **several modes of transport**

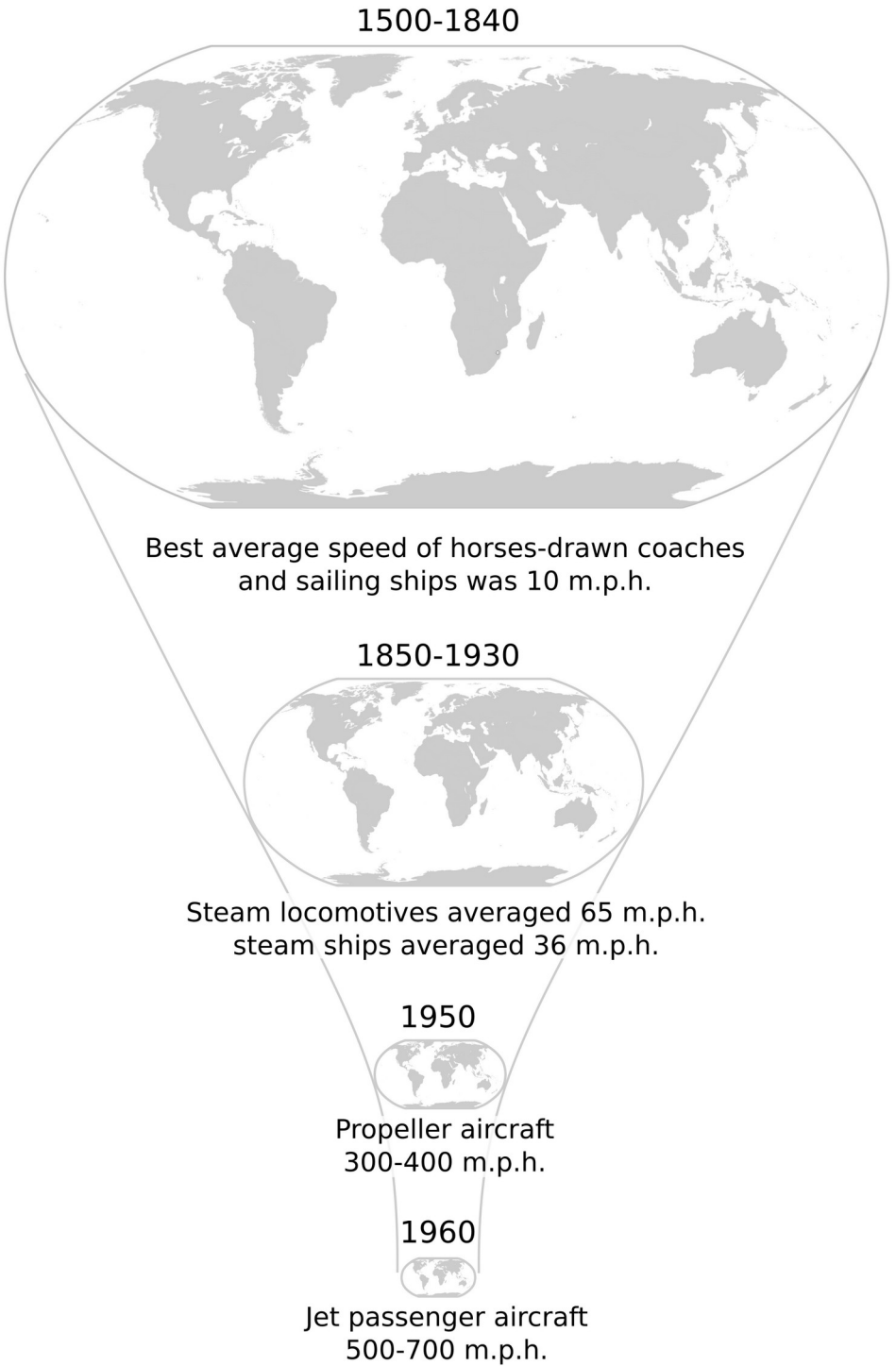
P3 Transport **networks** that generate detours

P4 Spatial **inversion**



(L'Hostis 2014)

3. Representing Geographical Time-Space

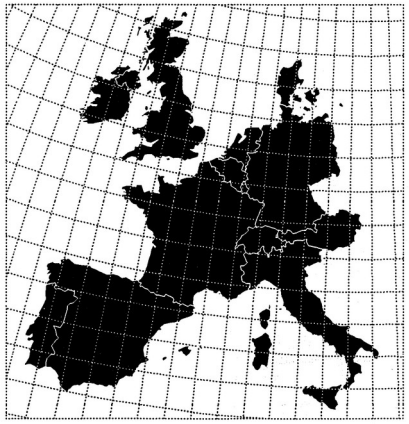


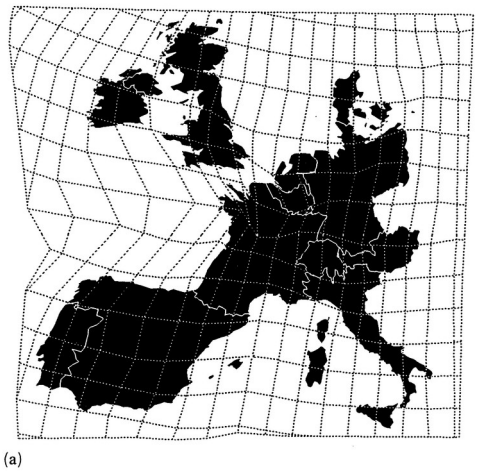
The “iconic”
McHale 1969
image

Associated to
Dicken
“Global shift”
1986, 1992,
1998

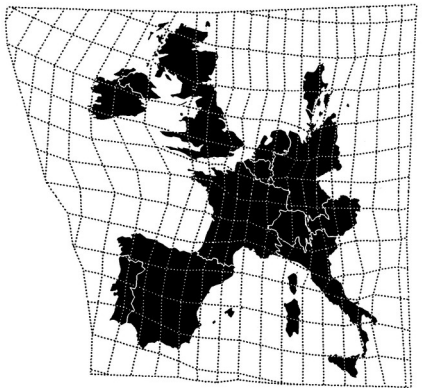
P1	Acceleration	Yes
P2	Coexistence of modes	No
P3	Networks	No
P4	Spatial inversion	No

3. Representing Geographical Time-Space





1993



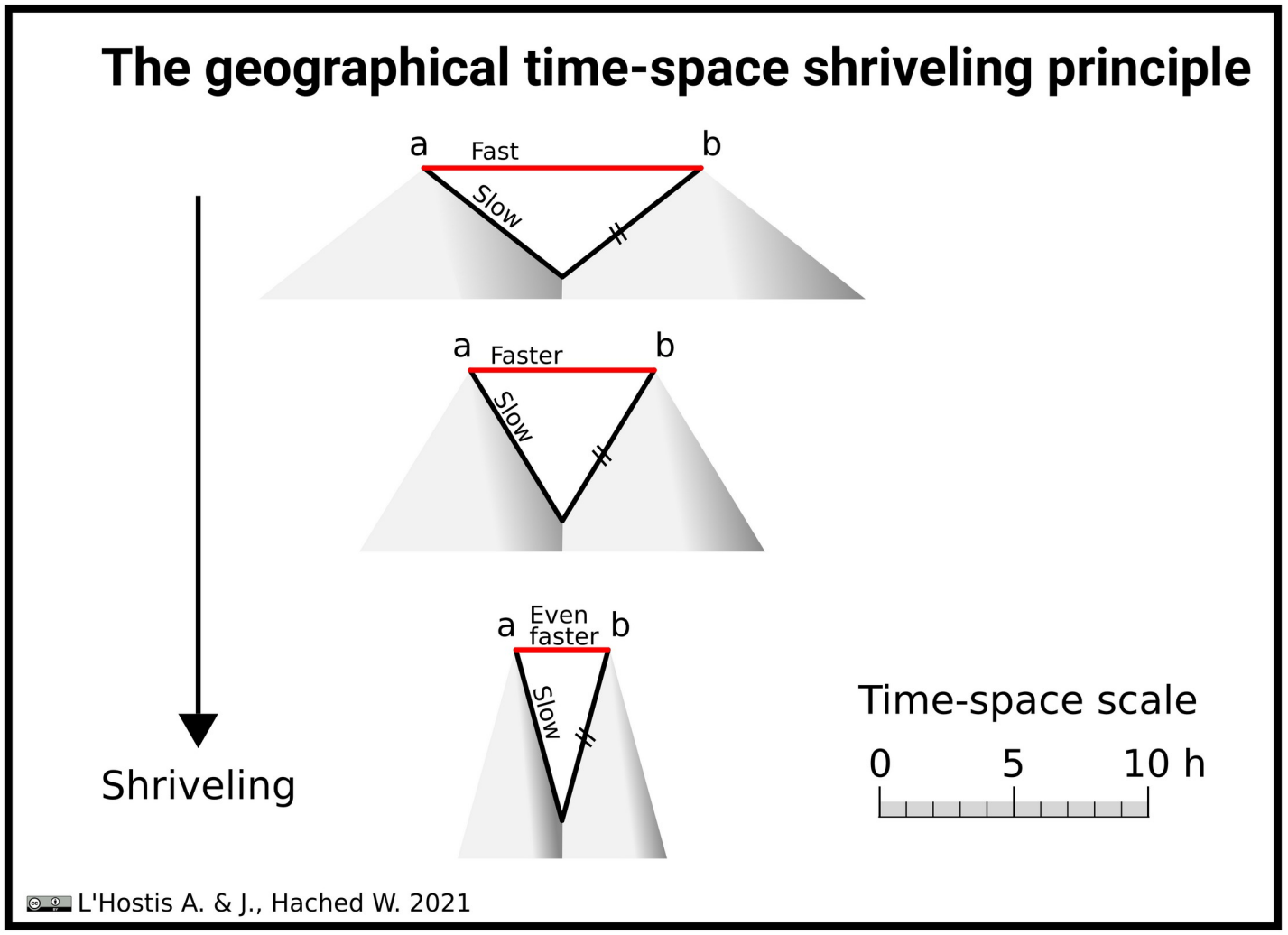
2010

The “plastic spaces” **anamorphic cartography**

Spiekerman & Wegener 1994

P1	Acceleration	Yes
P2	Coexistence of modes	Possible
P3	Networks	No
P4	Spatial inversion	No

4. The Geographical time-space model of shriveling

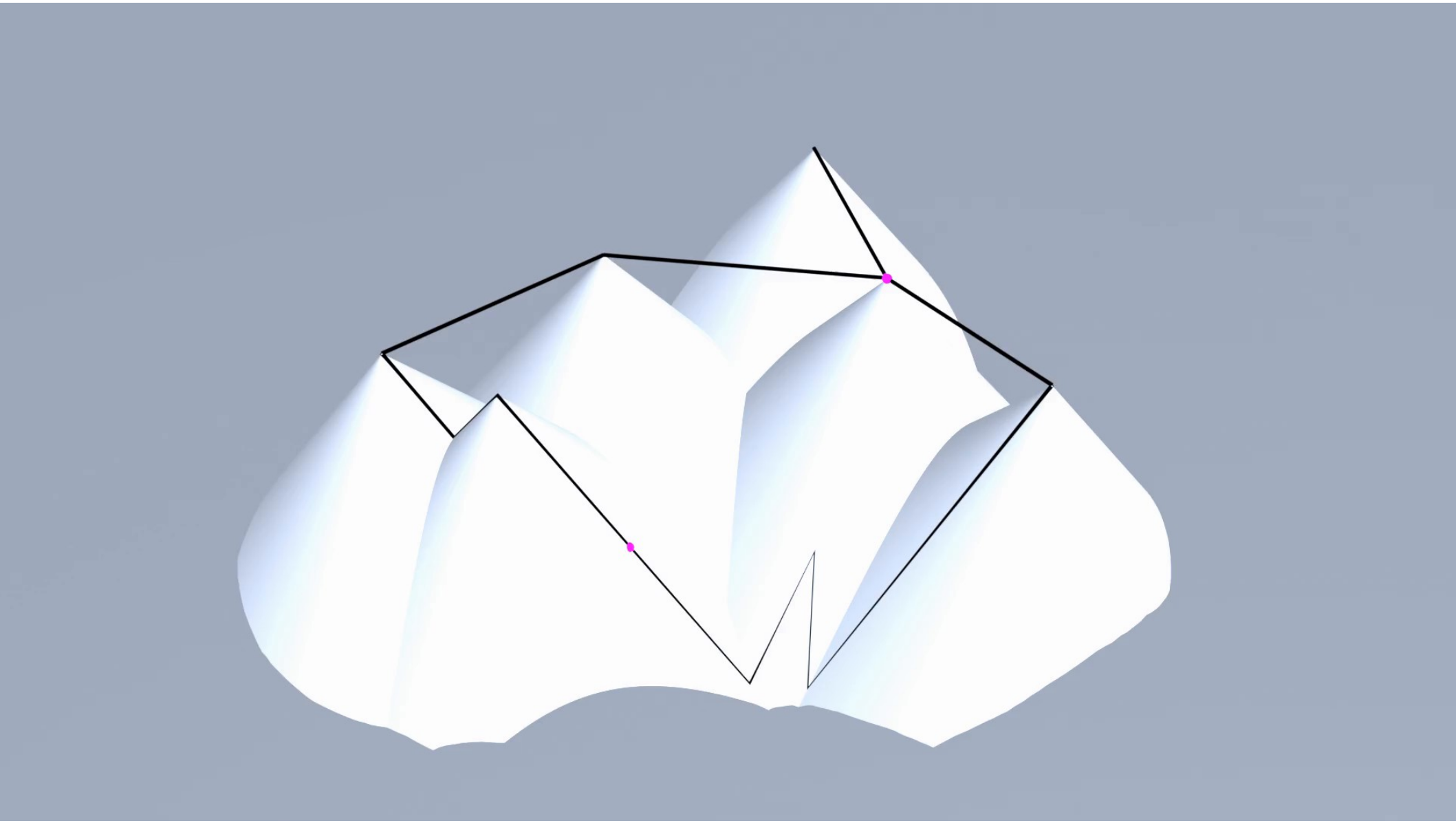


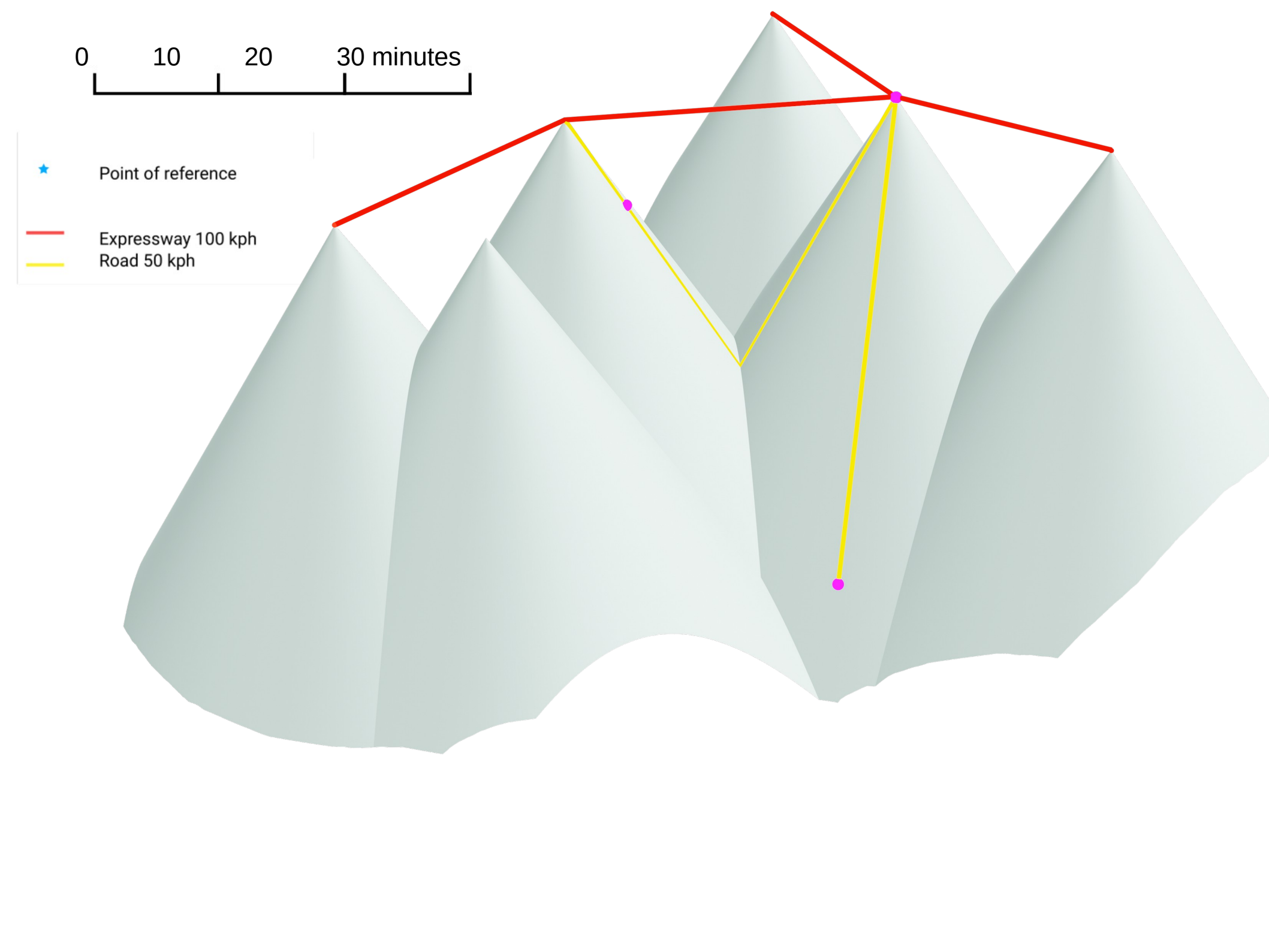
Mathis 1990
L'Hostis 1993
L'Hostis & Hached 2021

Shriveling (EN)
Ratatinement (FR)
Raggrinzimento (IT)

P1	Acceleration	Yes
P2	Coexistence of modes	Yes
P3	Networks	Yes
P4	Spatial inversion	Yes

5. Implementing the geographical time-space model of shriveling




0
10
20
30 minutes
Point of reference
Expressway 100 kph
Road 50 kph

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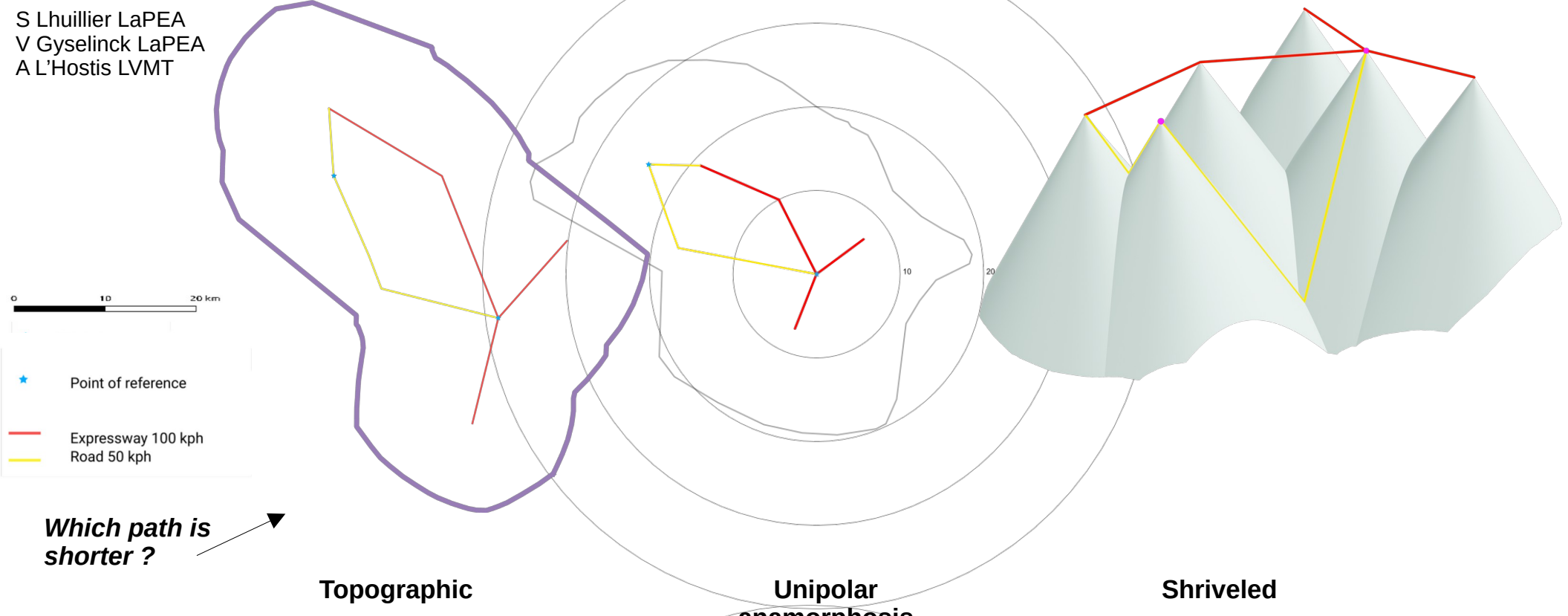


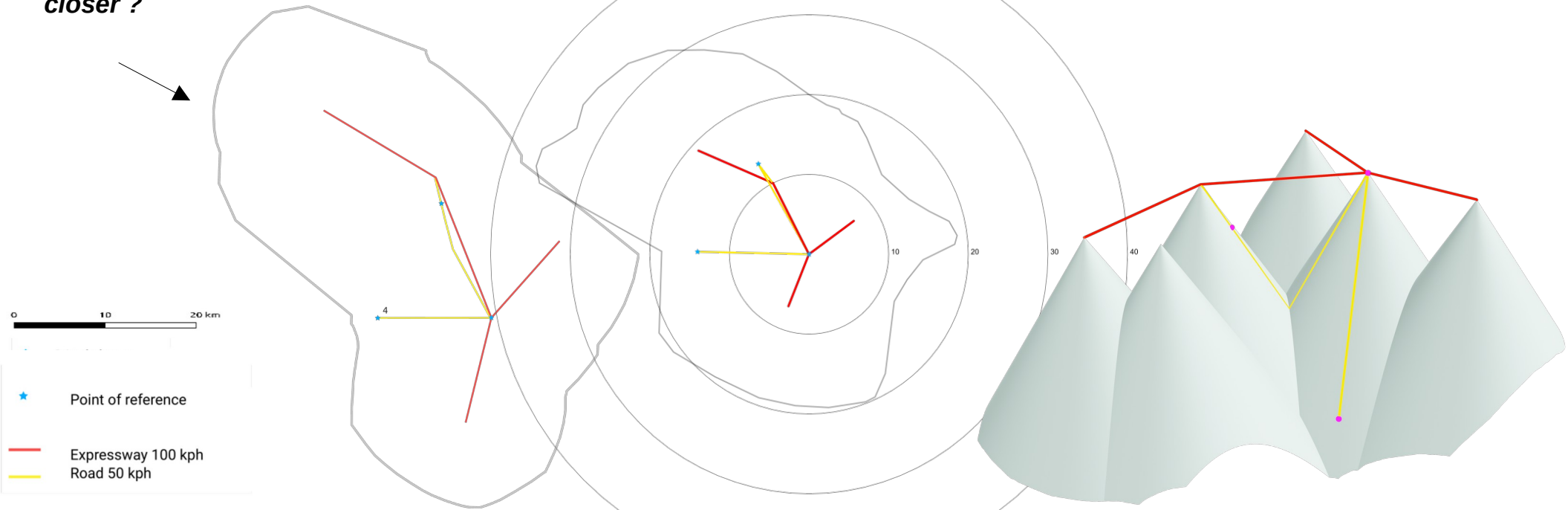
Which path is shorter ?

Topographic

Unipolar anamorphosis

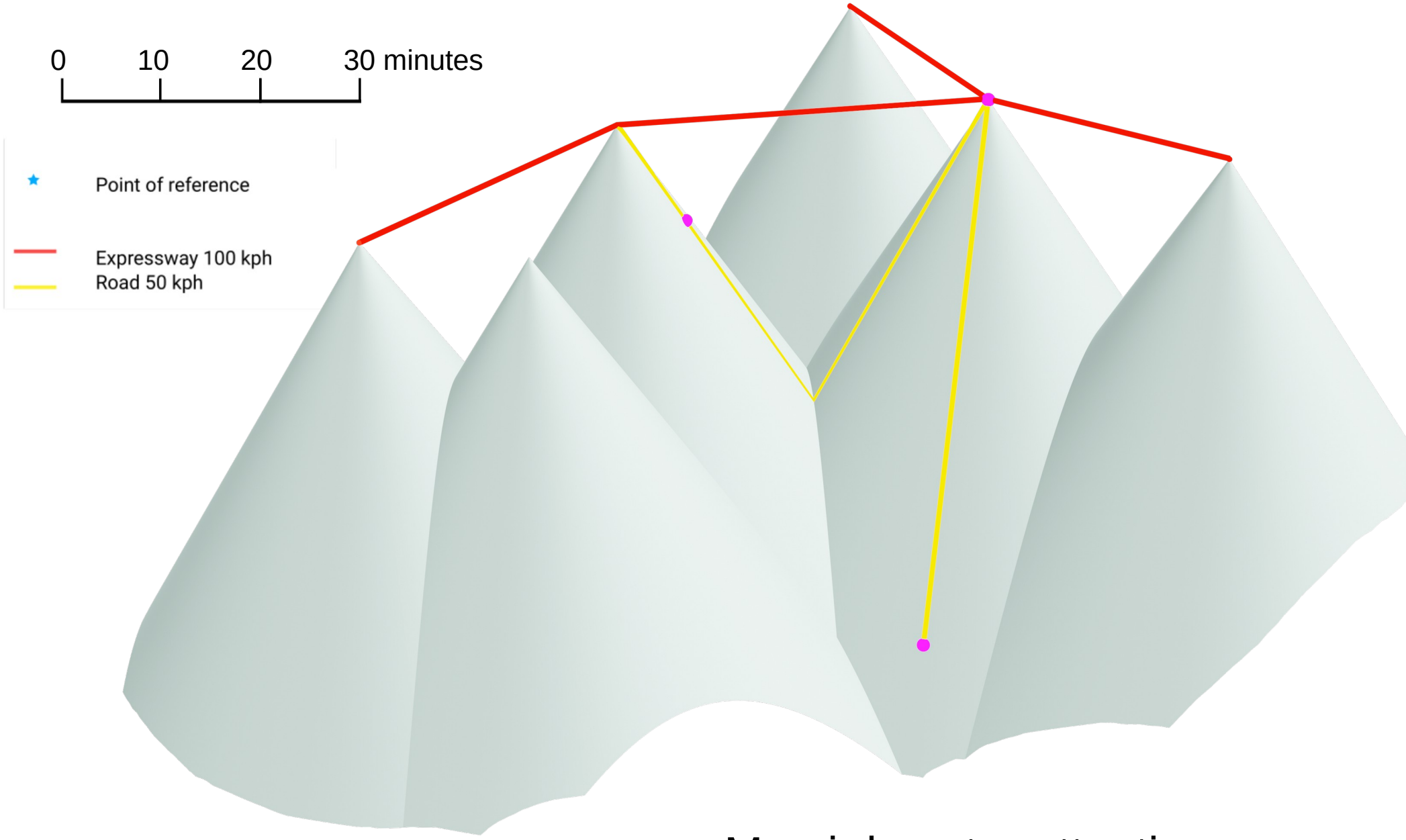
Shriveled

Which city is closer ?



Points for discussion

- Experts analysis points towards superiority of the shrivelled map over topographic and anamorphosis
- Orientation of the map could prove an issue for representing any path situation



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Merci de votre attention

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https://github.com/theworldisnotflat/shriveling_world