15-minute city and 30-minute world: Representing the future geographical time-space

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15-minute city and 30-minute world: Representing the future geographical time-space

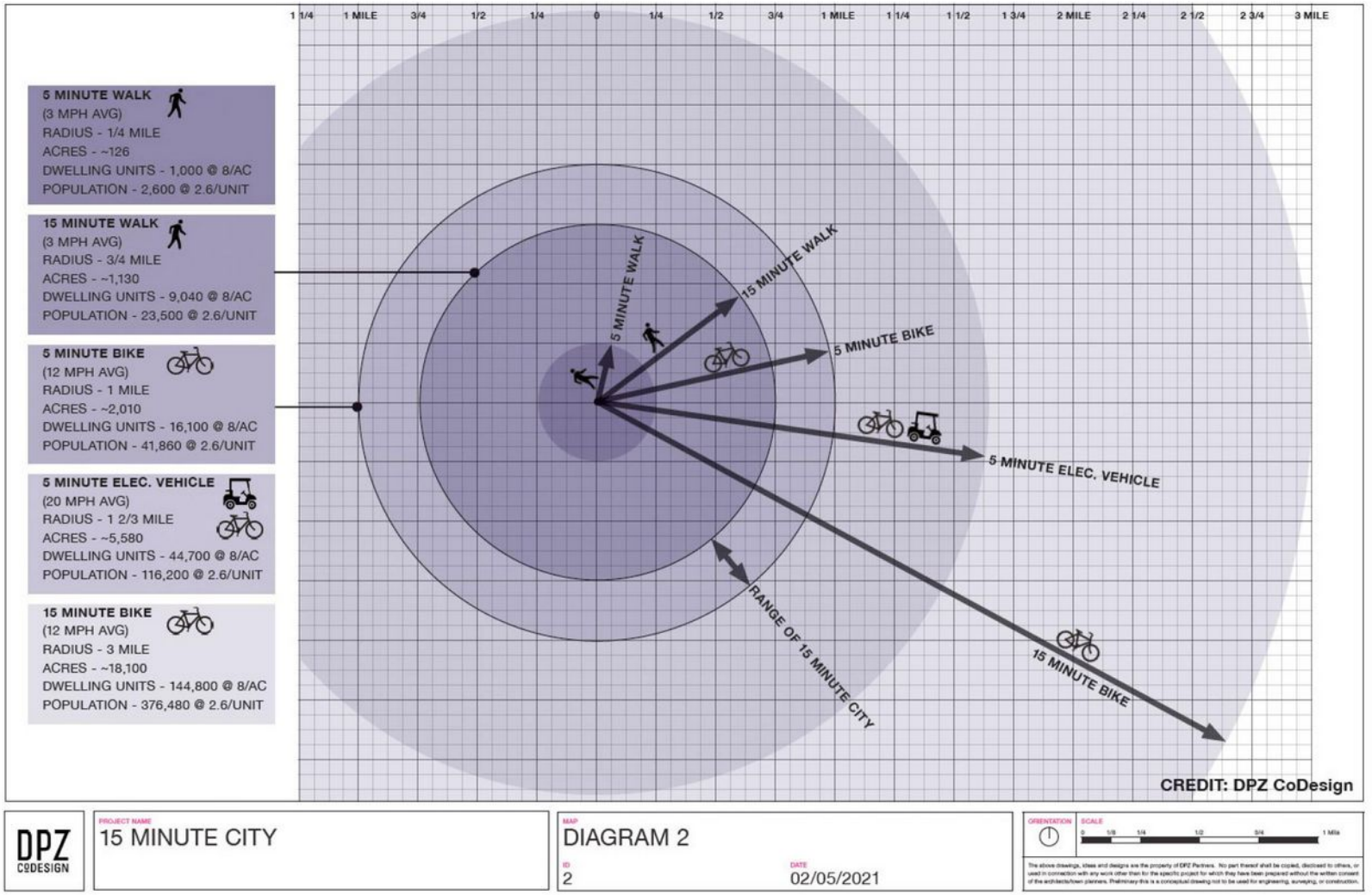
Outline

0. 15-minute city / 30-minute world
1. Investigating *geographical time-space*
2. Properties of *geographical time-space*
3. Representing *geographical time-space*

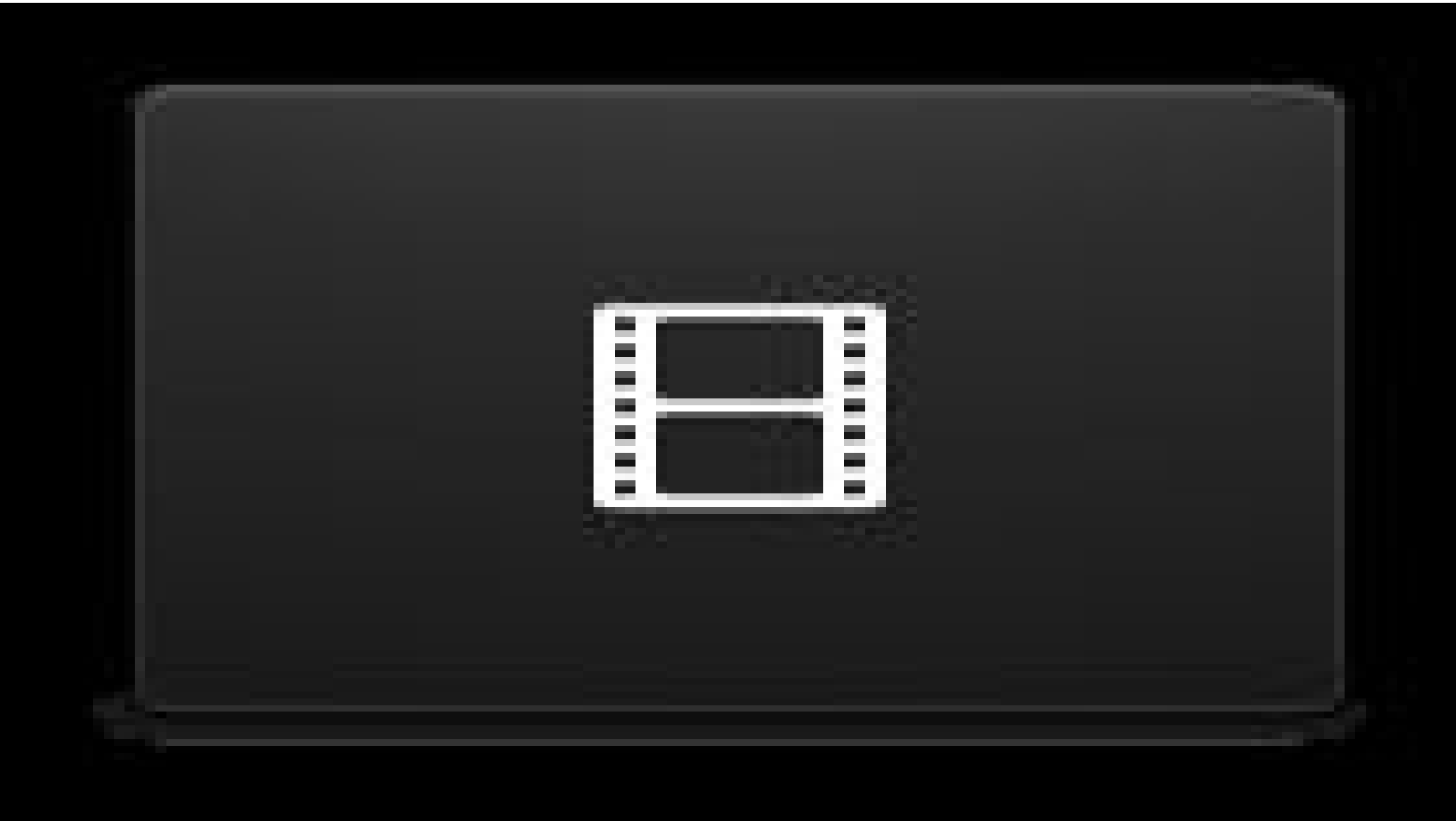
0. 15 min city / 30 min world

In the current urban reflection, the concept of the *15 minutes city* emerges, with

- baskets of urbans functions accessible
- with slow transport modes



At the same time...



1. Investigating Geographical Time-Space

Two major questions of geography:

➔**Where** (is a place)?

➔At what **distance** (are places to each other)?

Distance refers to movement between geographical places, and is mainly characterized by **time**

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

2. Properties of Geographical Time-Space

P1 Acceleration

Bardo museum, Tunisia

Acceleration = modernity

2. Properties of Geographical Time-Space

Properties

P1 Acceleration of movement : a shrinking space

P2 Coexistence of several transport modes

Boeing 747-100 in 1978 (A Bidini)

750 kph

Concorde in 1994 (Spaceaero2, CC BY-SA)

1500 kph

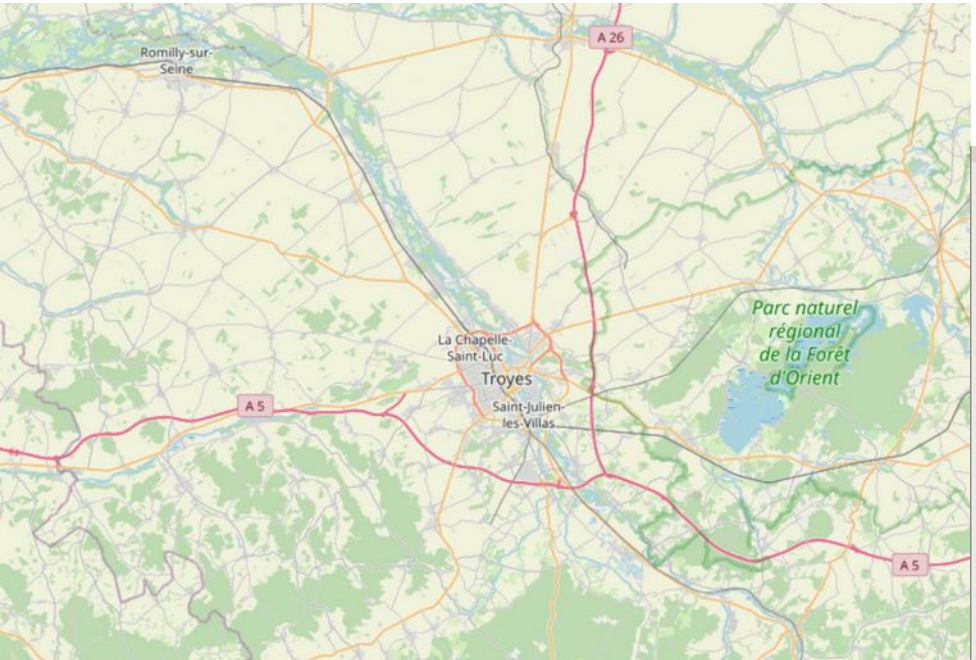
2. Properties of Geographical Time-Space

Properties

P1 Acceleration of movement : a shrinking space

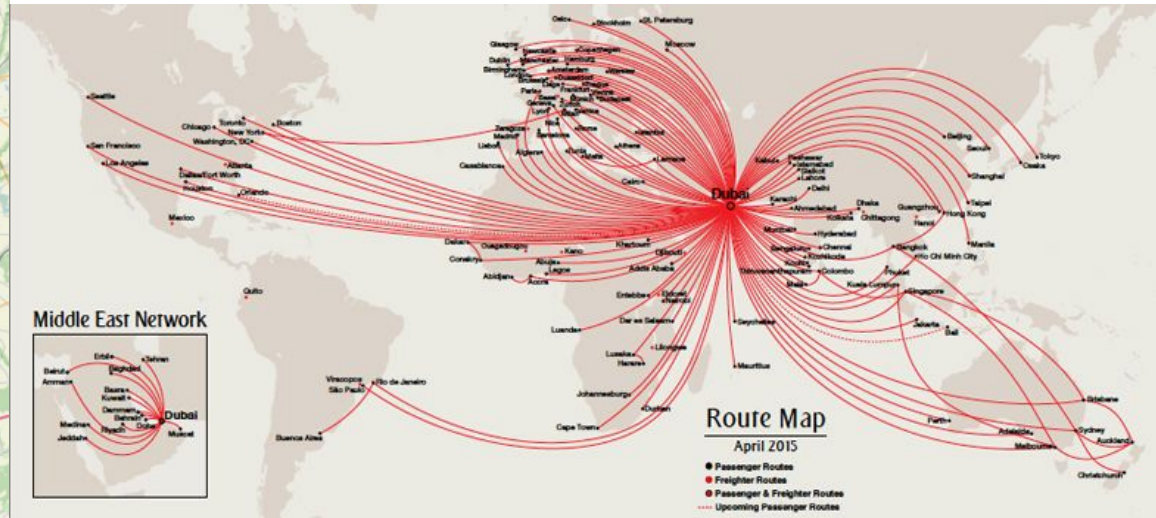
P2 Coexistence of several transport modes

P3 The shape of networks generating shortcuts and detours



OpenStreetMap

Emirates Route Map 2015



2. Properties of Geographical Time-Spaces

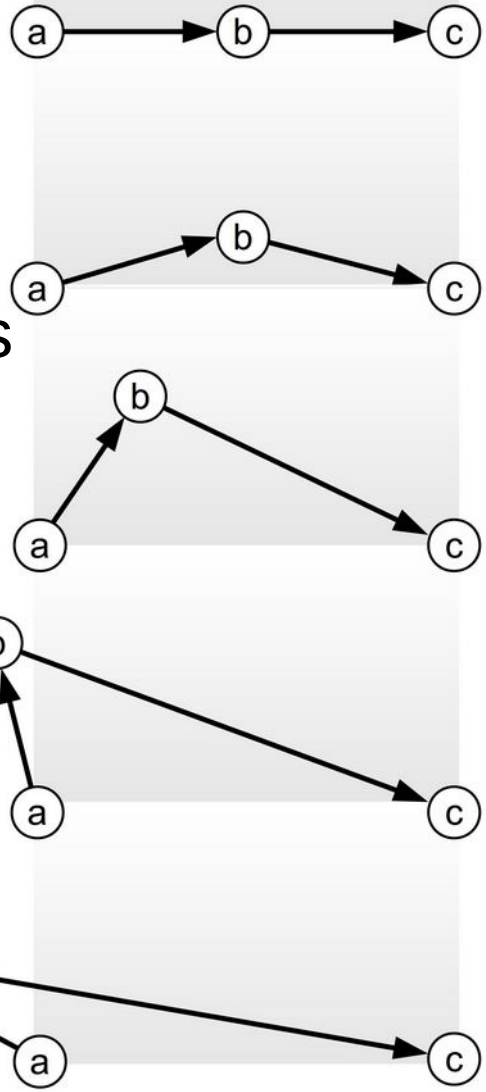
Properties

P1 Acceleration of movement

P2 Coexistence of several transport modes

P3 The shape of networks generating shortcuts and detours

P4 Spatial inversion



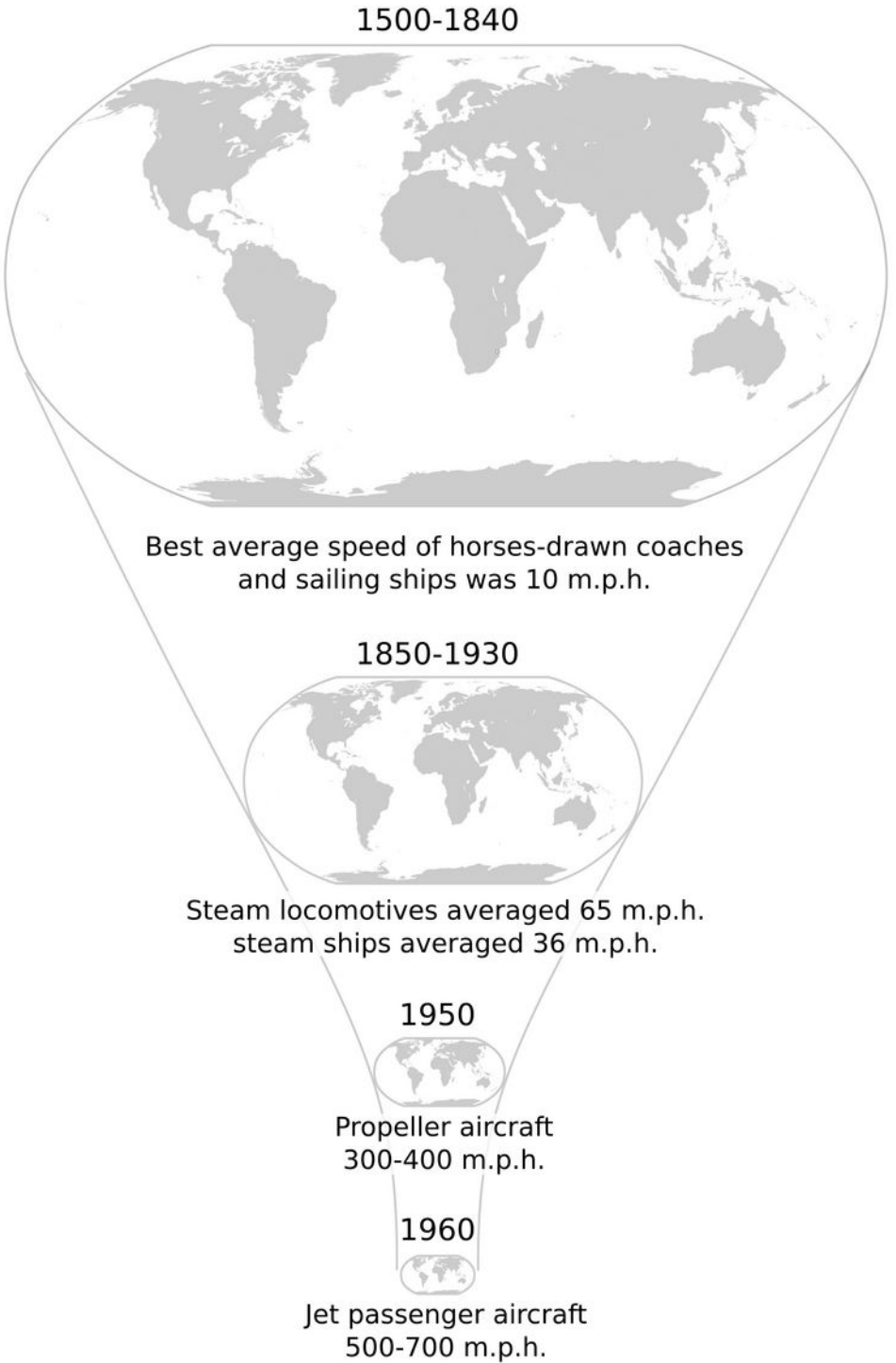
(L'Hostis 2014)

3. Representing Geographical Time-Space

Checking properties:

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

3. Representing Geographical Time-Space

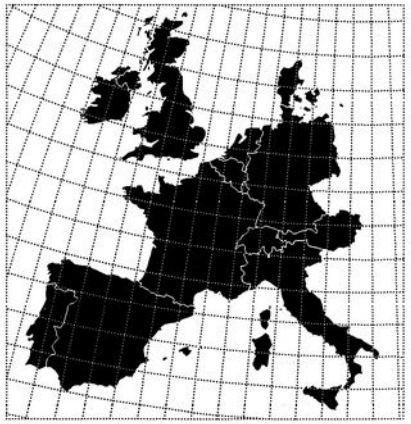


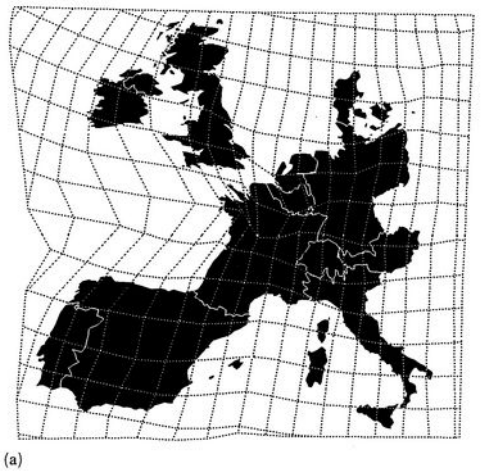
The “iconic”
McHale 1969
image

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

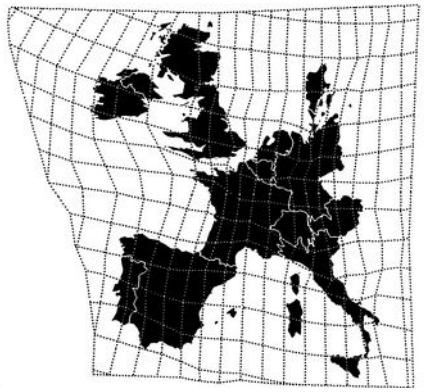
P1	Acceleration	Yes
P2	Coexistence of modes	No
P3	Networks	No
P4	Spatial inversion	No

3. Representing Geographical Time-Space





1993



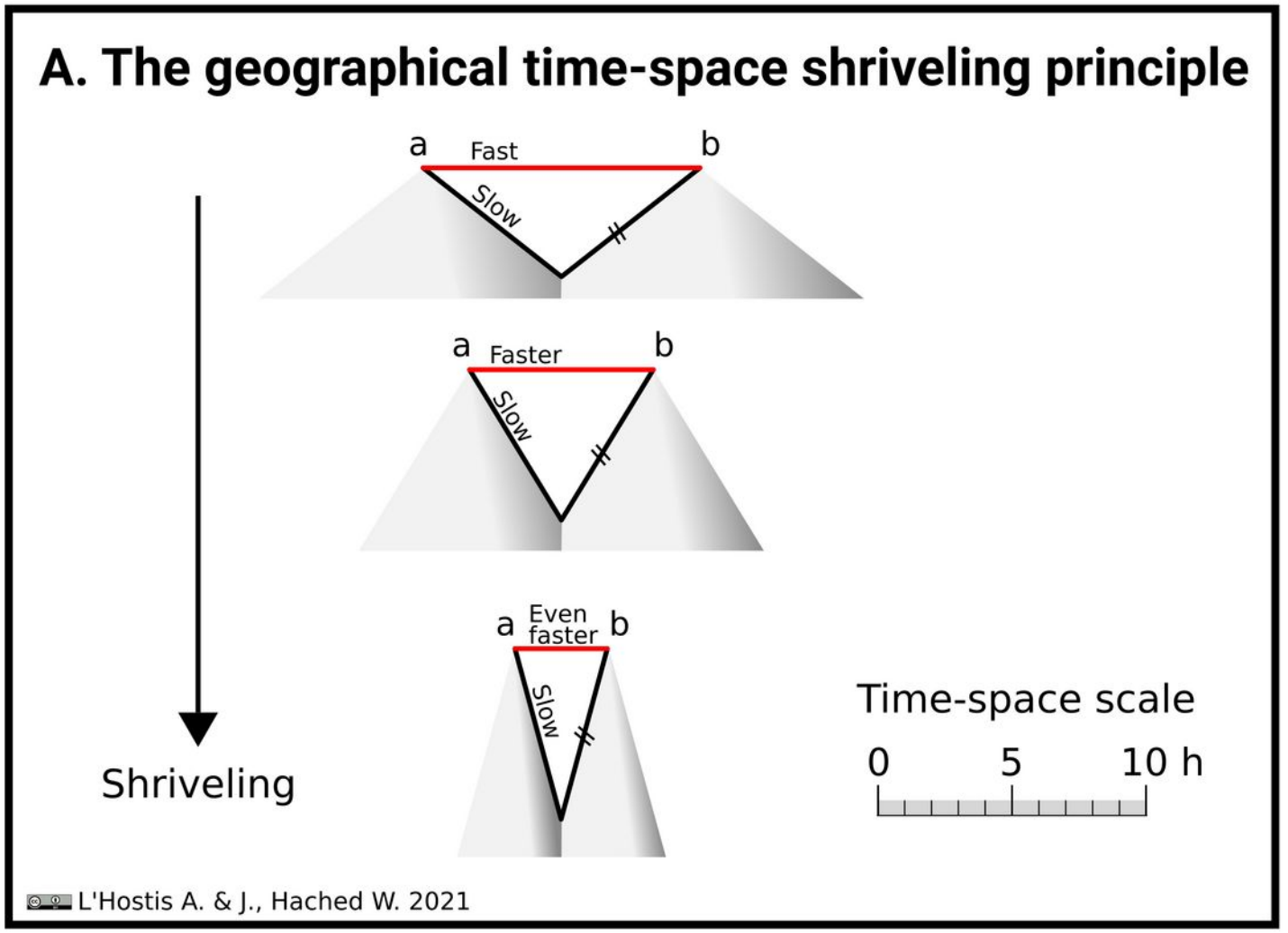
2010

The “plastic spaces” **anamorphic cartography**

Spiekerman & Wegener 1994

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

3. Representing Geographical Time-Space



Geographical time-space relief representation

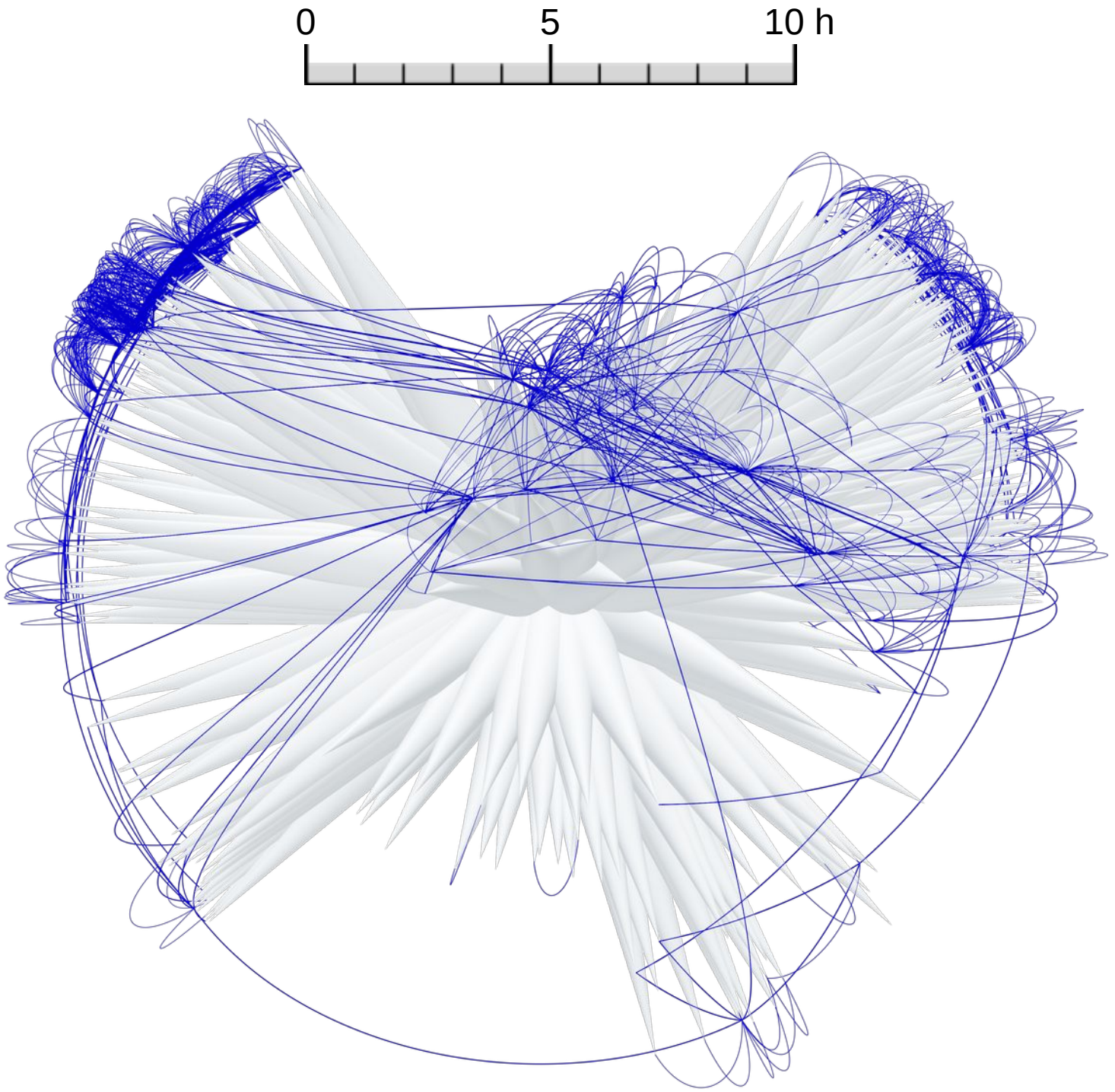
Mathis 1990, L'Hostis 1993, L'Hostis & Hached 2021

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

The Shriveled earth, 2020

Geographical time-space relief representation

L'Hostis 2021



Airline flights
at 750 kph
(11 x road speed)

City

Terrestrial
time-space
at 70 kph

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

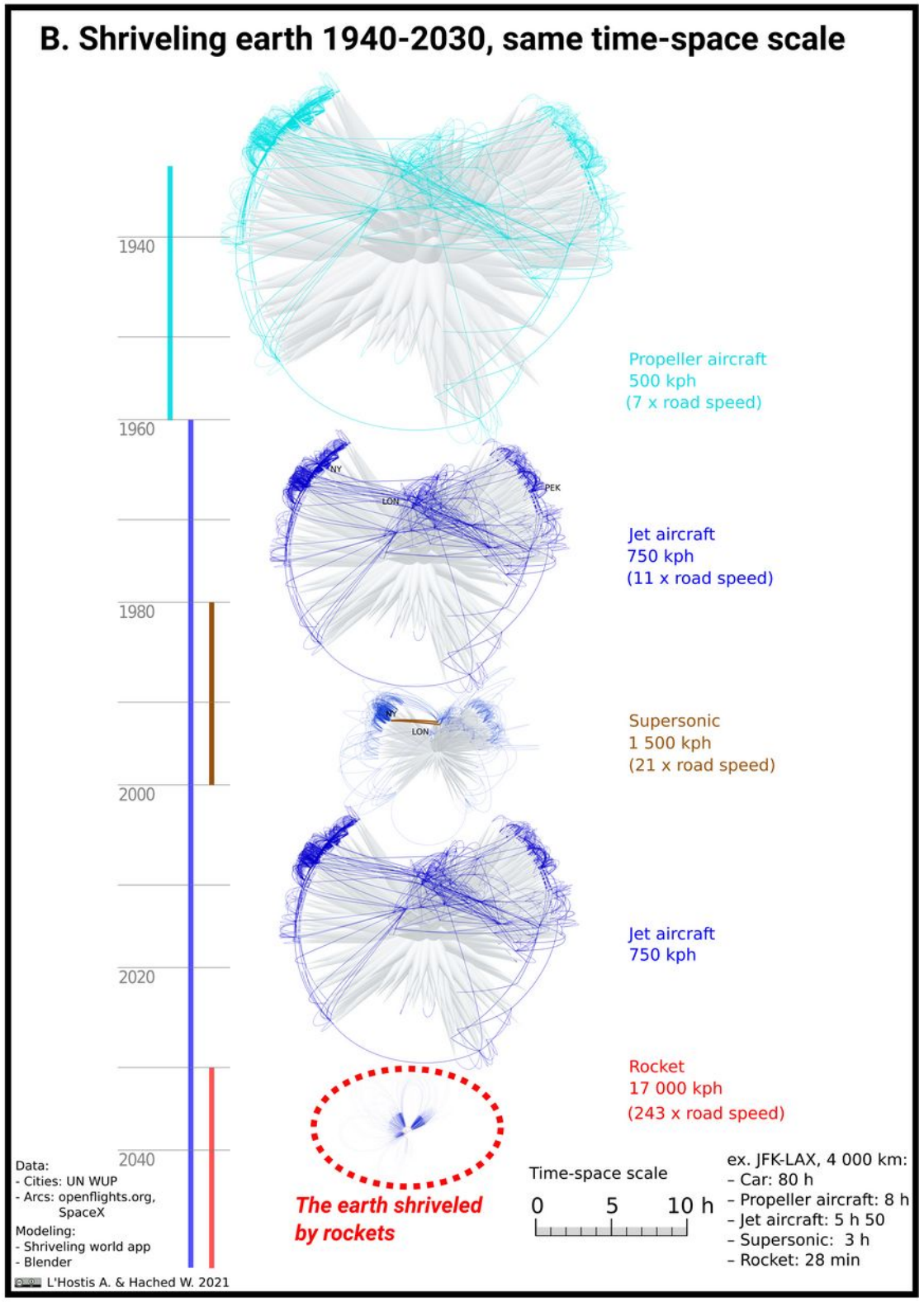
500 kph

750 kph

1 500 kph

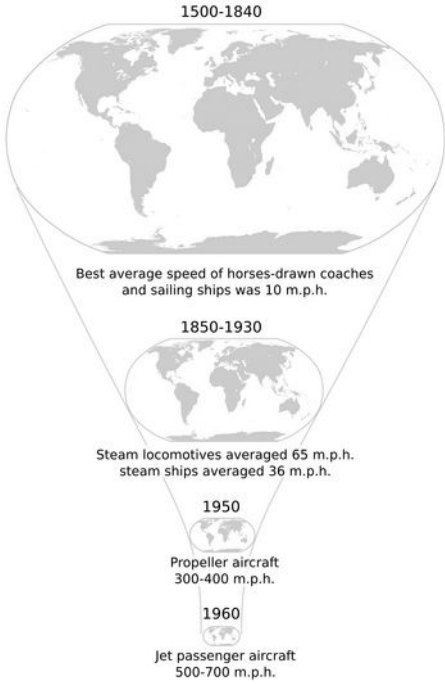
750 kph

17 000 kph



Geographical time-space relief representation

L'Hostis & Hached 2021

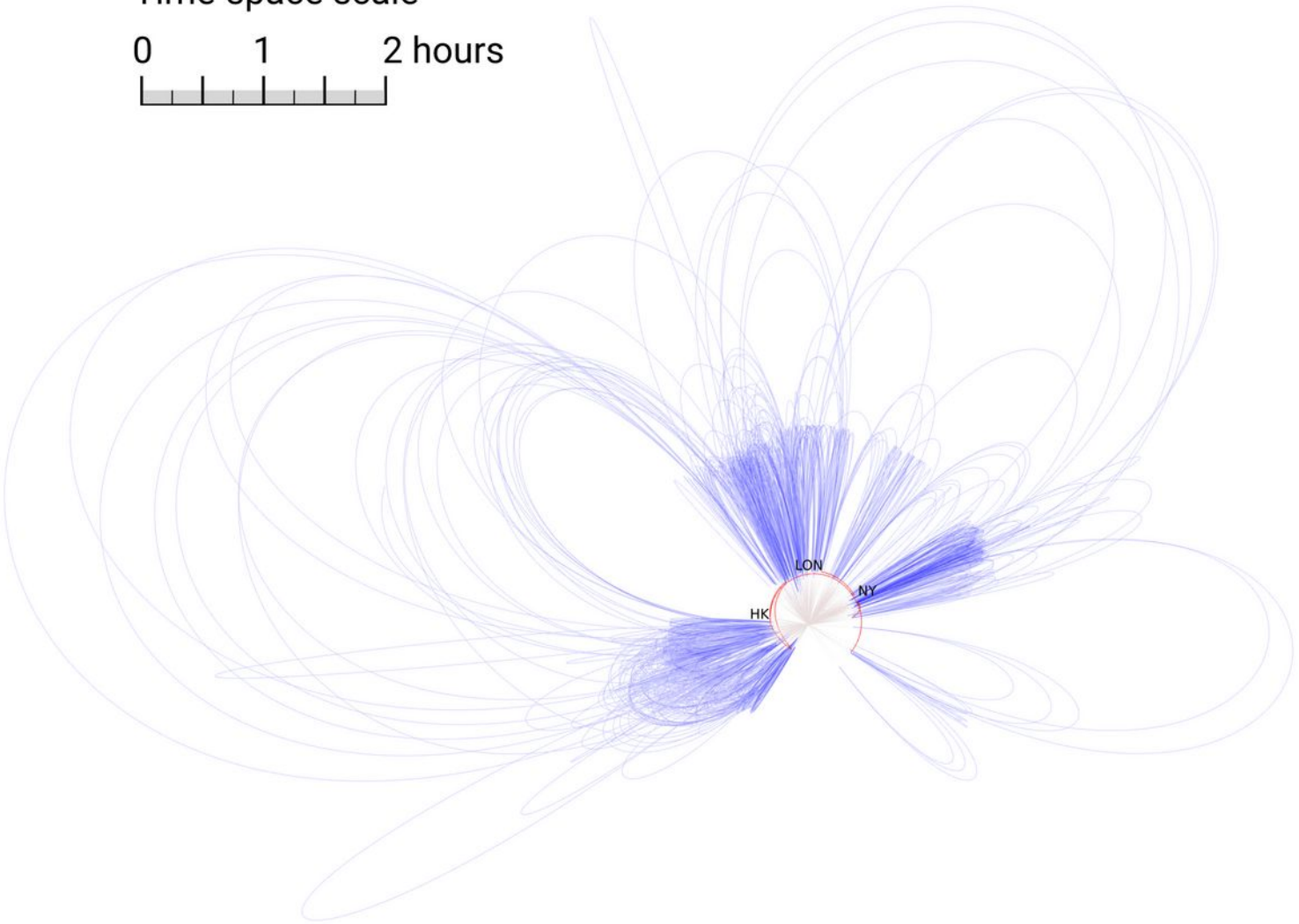


P1	Acceleration	Yes
P2	Coexistence of modes	Yes
P3	Networks	Yes
P4	Spatial inversion	Yes

C. Shriveled earth 2030, rockets outperform airlines

Time-space scale

0 1 2 hours



17 000 kph

City

Terrestrial time-space at 70 kph

Airline flights at 750 kph (11 x road speed)

Rocket flights at 17 000 kph (243 x road speed)

Data:
- Cities: UN WUP
- Arcs: openflights.org
  SpaceX

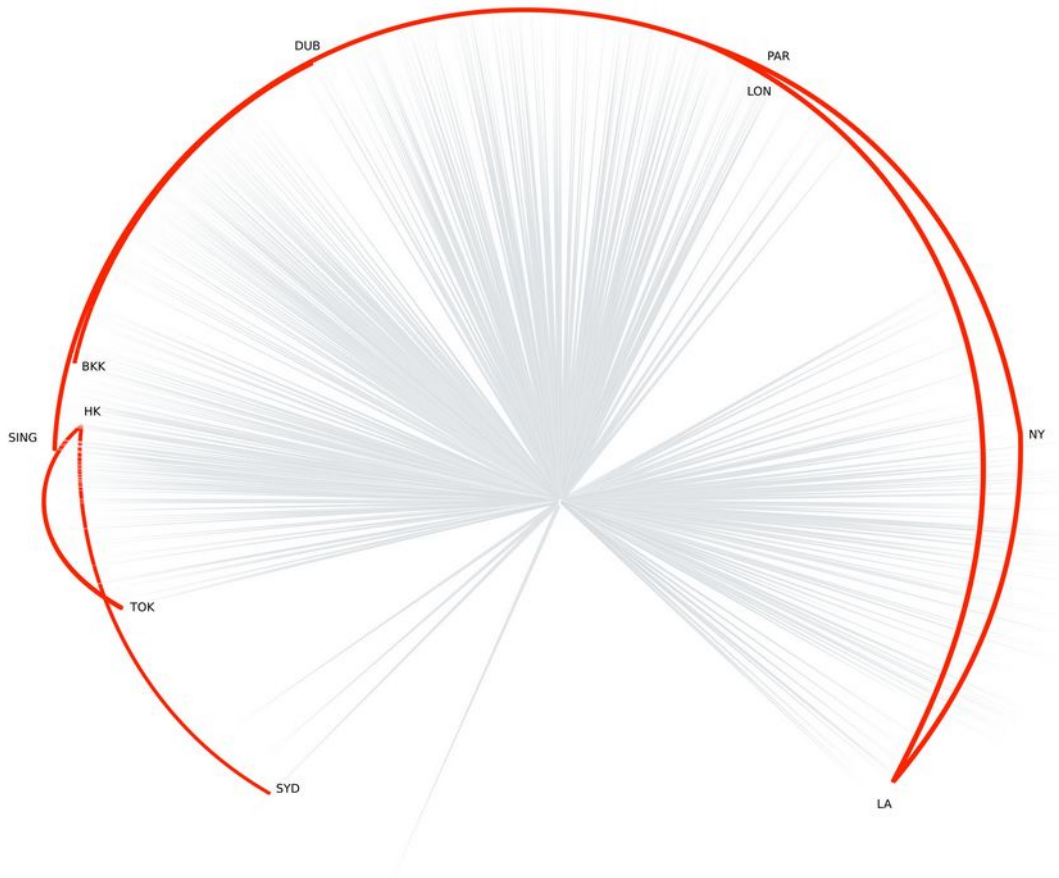
Modeling:
- Shriveling world app
- Blender

L'Hostis 2021

D. Shriveled earth 2030: rockets turn geographical space into "time-space needles"

Time-space scale

0 15 30 45 min



City

Terrestrial time-space at 70 kph

Rocket flights at 17 000 kph (243 x road speed)

Data:
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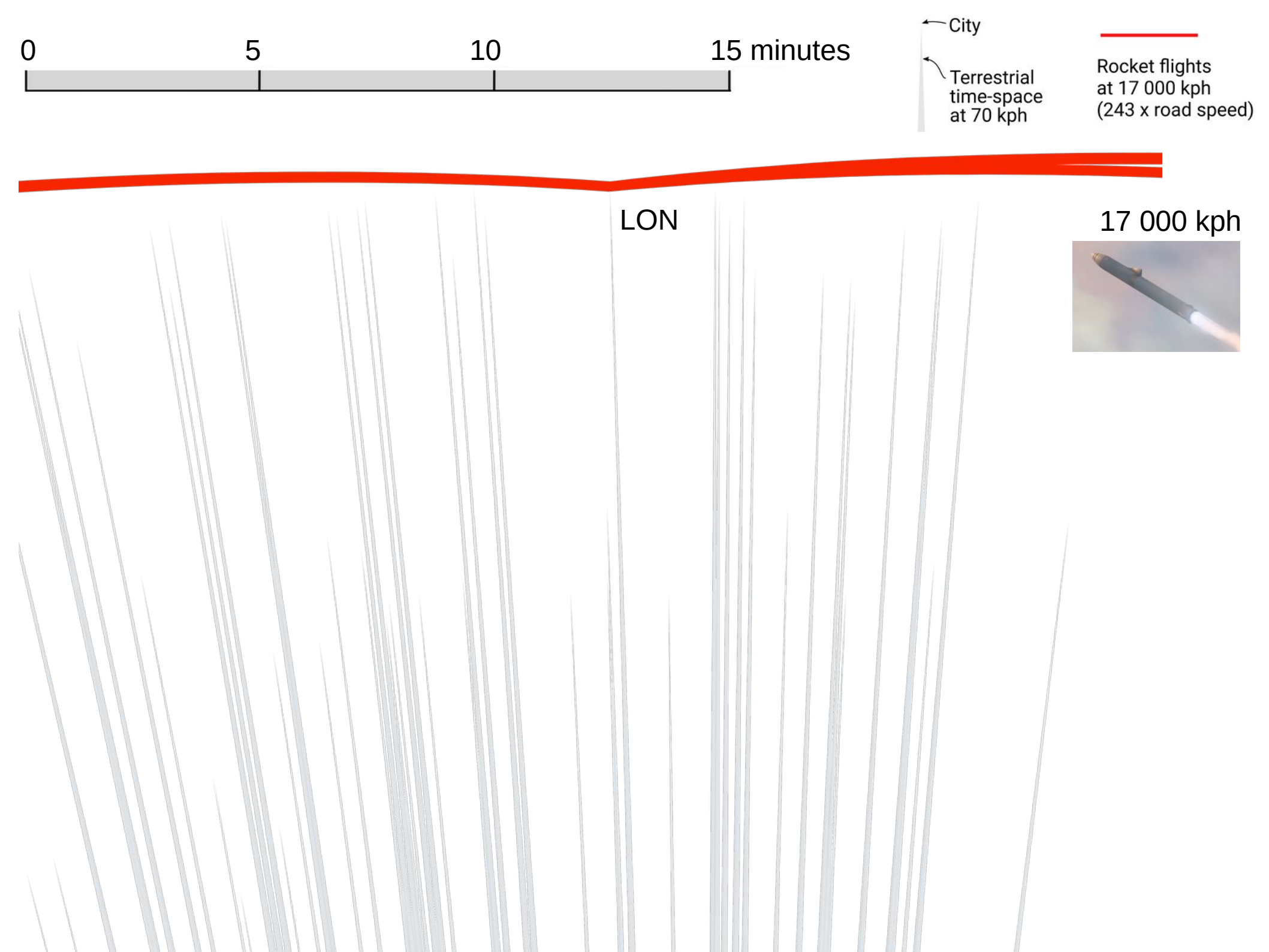
L'Hostis 2021

17 000 kph


0
5
10
15 minutes
City
Terrestrial time-space at 70 kph
Rocket flights at 17 000 kph (243 x road speed)
LON
17 000 kph

LON

- ➔ The hypothesis of a system of distances:
  - ➔ Hyper-fast **inter**city distances
  - ➔ (Comparatively hyper-) Slow **intra**city distances
- ➔ The geographical time-space of SpaceX point-to-point rocket transport: "shriveling" the earth to the point of turning space into "times-space needles"
- ➔ The spatio-temporal footprint of cities seems to disappear
- ➔ A brutal schock on geographical time-space
  - ➔ On its representation
  - ➔ On its experience?
- ➔Can we encompass the 15-min city in a 30-min world?

LON

Thank you for your attention

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https://github.com/theworldisnotflat/shriveling_world

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4 Comments and perspectives

Acceleration remains a powerful marker of modernity

Effects on time-space are dramatic: space vanishes

4 Comments and perspectives

Words associated to the graphical model:

- ➔*Relief* as a metaphor of physical geography (L'Hostis 1993)
- ➔*Crumpling* a metaphor of the deformation of a sheet of paper (L'Hostis 1993)
- ➔*Shriveling* (Tobler 1997) a metaphor of a maturing fruit

Connections with other domains of knowledge:

- ➔The time-space of dreams in psychoanalysis, the crumpling space of Lacan (Diener 2009)
- ➔The wraparound universe (Luminet 2008)
- ➔The idea of the wormhole in relativistic physics (Tobler 2014)

A Bigo, 2020, “Les transports face au défi de la transition énergétique”, PHD thesis, p. 177

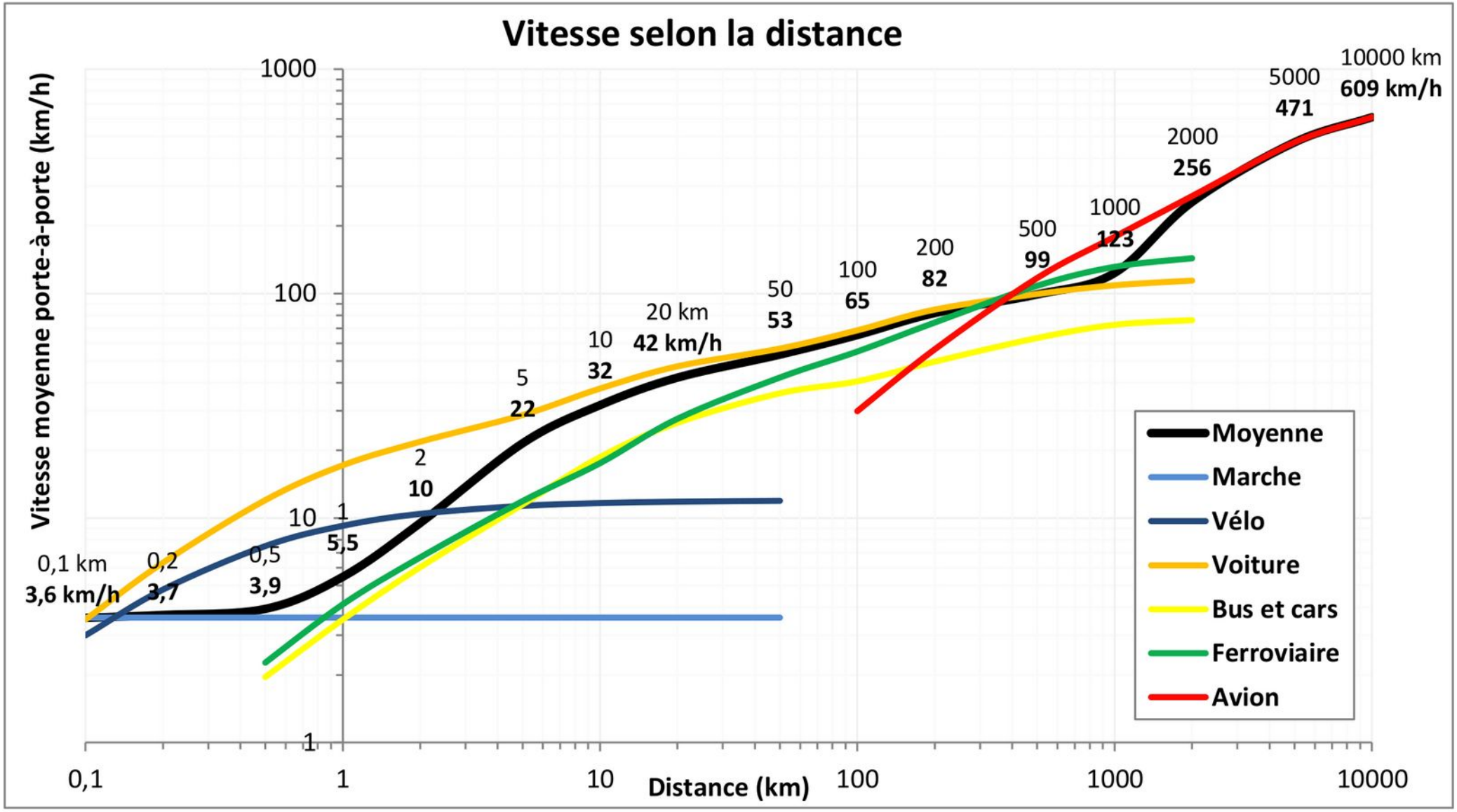

Figure 12 : Vitesse moyenne porte-à-porte des déplacements selon la distance parcourue

(graphique avec échelle logarithmique pour les distances en abscisse et pour les vitesses en ordonnée ; les étiquettes de données donnent les vitesses en gras pour différentes distances ; par exemple, la vitesse moyenne estimée pour les trajets de 20 km est de 42 km/h ; répartition entre les modes et sous-modes pour une distance donnée tirée notamment des distances moyennes et trafics de chaque mode et sous-mode, et de Insee, 2017 pour la courte distance, CGDD, 2018a pour la LD)

4 Comments and perspectives

Model developments:

➔Cones and rounded edges are introduced in 2019

➔Need to visually strengthen the idea of continuum of the geographical surface

➔Other ideas? join https://github.com/theworldisnotflat/shriveling_world