Time Curves: Folding Time for Temporal Evolution in Data

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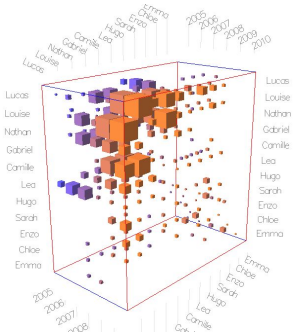
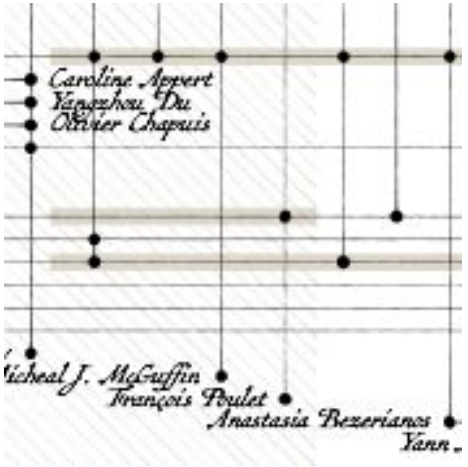




Time Curves

- General approach for visualizing patterns of evolution in temporal data
- Patterns:
  - Slow and regular progressions
  - Large sudden changes
  - Reversals to previous states
- Can be of interest in a range of domains

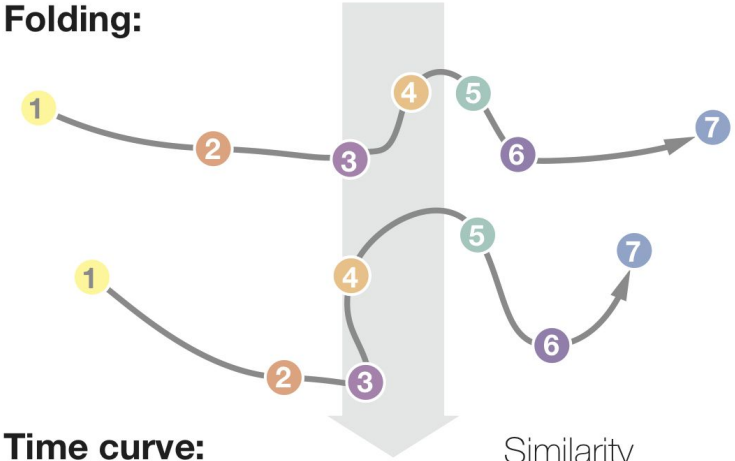
Introduction

- Folding timeline visualization into itself so as to bring similar time points close to each other
- Datatype-agnostic

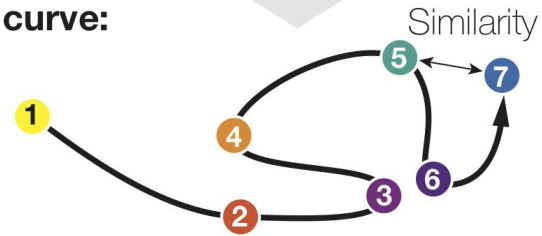
Timeline:

Circles are data cases with a time stamp.
Similar colors indicate similar data cases.

Folding:



Time curve:



The temporal ordering of data cases is preserved.
Spatial proximity indicates similarity.

http://www.aviz.fr/~bbach/timecurves/Bach2015timecurves.pdf

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Palestine

From Wikipedia, the free encyclopedia

Palestine usually refers to:

- Palestine (region), a geographical and historical region in the Middle East
- State of Palestine, a modern, partially recognized, state in the Middle East
- "Palestinian territories", or "occupied Palestinian territories", terms referring to the West Bank (including East Jerusalem) and the Gaza Strip which are occupied or otherwise under the control of Israel
  - Palestinian National Authority, also known as the *Palestinian Authority*, an interim self-government body established in 1994 to govern parts of the territories. Since 2013, the *Palestinian National Authority* is officially referred to as the *State of Palestine* by most international organisations.

(cur) = difference from current version, (prev) = difference from preceding version,

m = minor edit, → = section edit, ← = automatic edit summary

(newest | oldest) View (newer 50 | older 50) (20 | 50 | 100 | 250 | 500)

Compare selected revisions

- (cur | prev) ◉ 19:54, 2 April 2016 Bkonrad (talk | contribs) . . (6,462 bytes) (+1) . . *(wiktionary to top per mosdab)*
- (cur | prev) ◉ 18:46, 2 April 2016 Oncenawhile (talk | contribs) . . (6,461 bytes) (-1) . . *(move wiktionary down)*
- (cur | prev) ○ 21:31, 27 March 2016 Arminden (talk | contribs) . . (6,462 bytes) (+195) . . *(various; Islamic conquest of Pal. only complete in 641 (Caesarea, Ascalon))*
- (cur | prev) ○ 12:06, 27 March 2016 Triggerhippie4 (talk | contribs) . . (6,267 bytes) (+128) . . *(Undid revision 712168987 by Triggerhippie4 (talk))*
- (cur | prev) ○ 12:05, 27 March 2016 Triggerhippie4 (talk | contribs) . . (6,139 bytes) (-128) . . *(→Netherlands: red link)*
- (cur | prev) ○ 12:04, 27 March 2016 Triggerhippie4 (talk | contribs) . . (6,267 bytes) (-147) . . *(→See also: removed excessive links - Palestine (region) already listed above, no need to put every aspect of it here. Philistia already listed above. Alphabetical order)*
- (cur | prev) ○ 11:42, 27 March 2016 Triggerhippie4 (talk | contribs) . . (6,414 bytes) (-72) . . *(→Historical political entities: this disambiguation page should only list entities known as Palestine)*
- (cur | prev) ○ 20:55, 4 March 2016 DPL bot (talk | contribs) **m** . . (6,486 bytes) (-37) . . *(removing incoming links template; fewer than 25 links)*
- (cur | prev) ○ 07:41, 27 February 2016 Arminden (talk | contribs) . . (6,523 bytes) (-6) . . *(One and the same article)*
- (cur | prev) ○ 03:27, 27 February 2016 EdJohnston (talk | contribs) . . (6,529 bytes) (+25) . . *(Add pp-protect template)*

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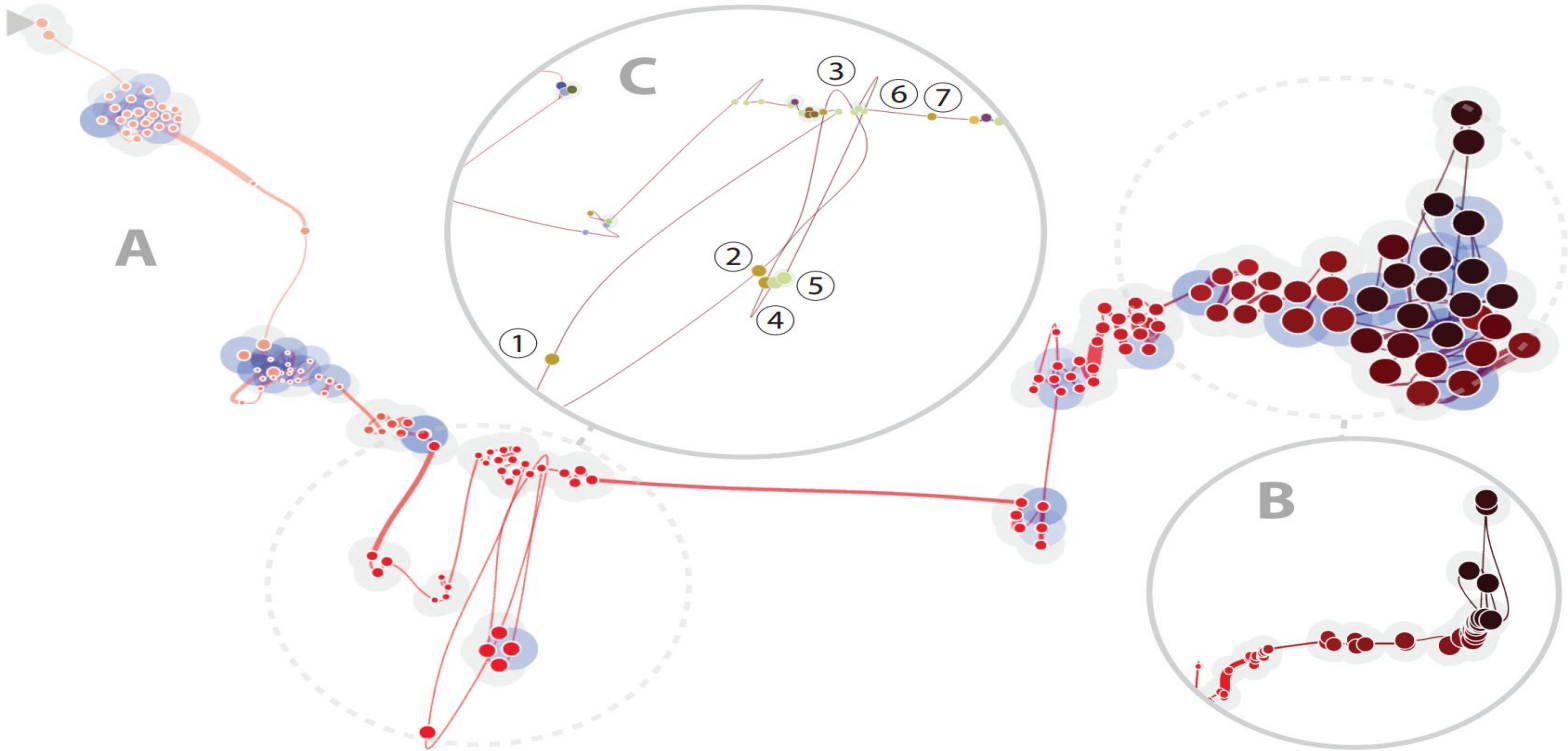
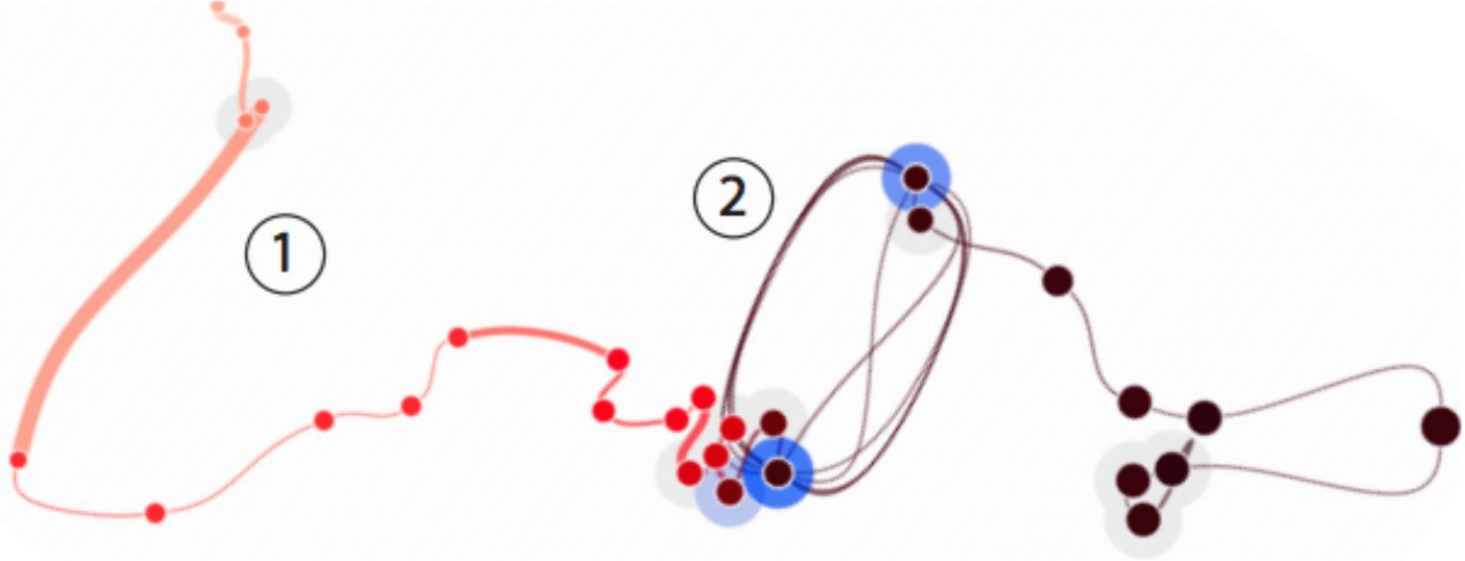
Wikipedia: *Palestine*



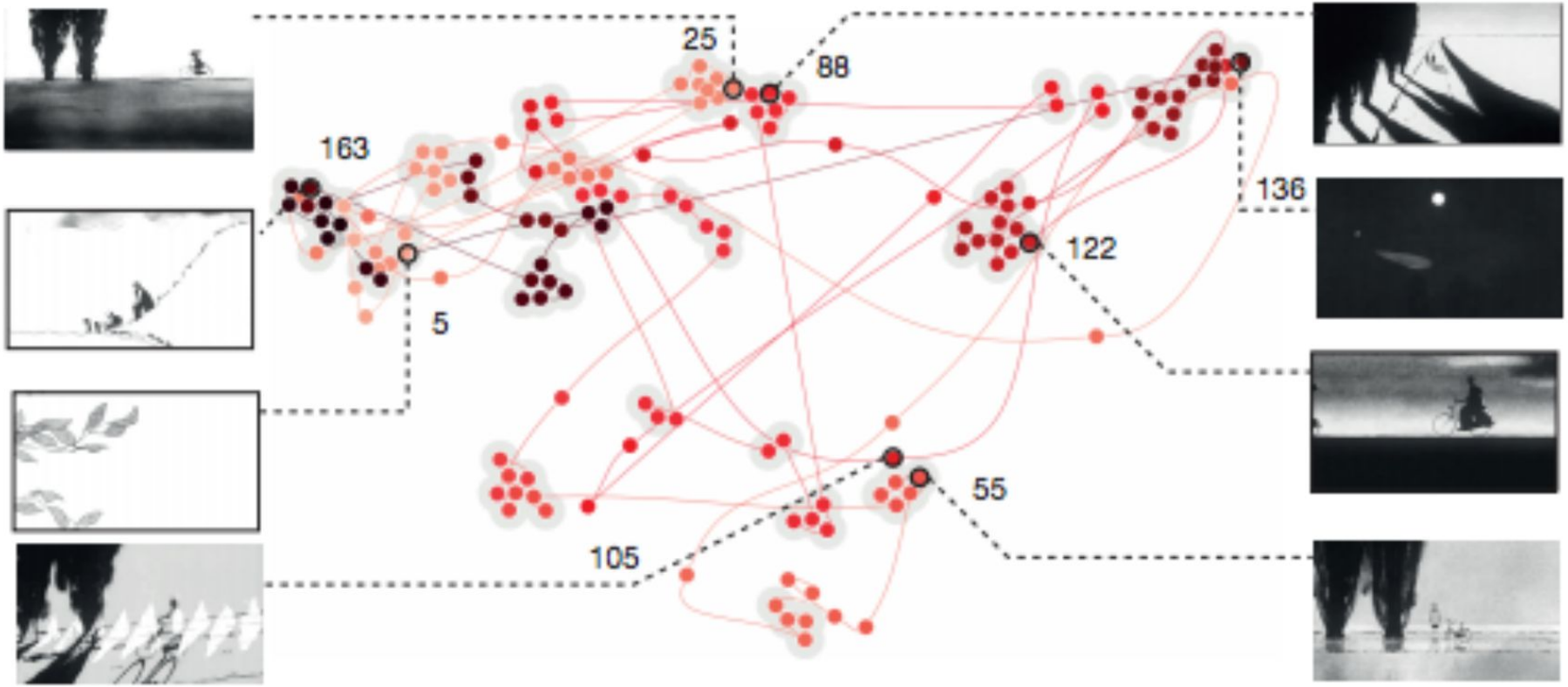
Wikipedia: *Chocolate*



Vandalism

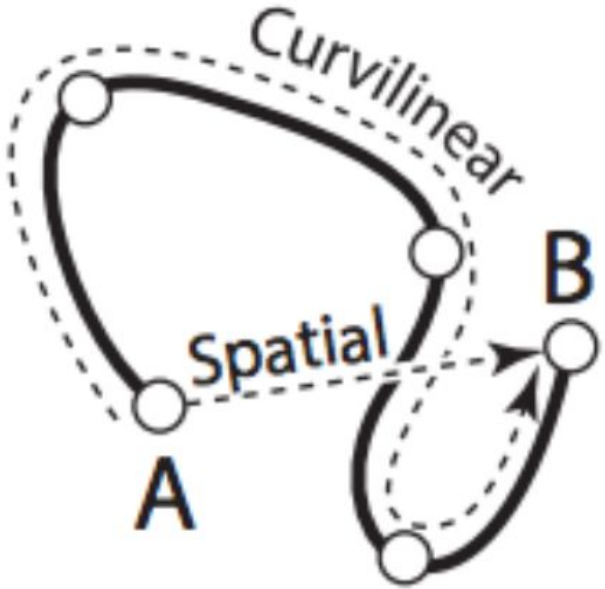
Video Recordings

- Time points ⟶ **video frames**
- Similarity ⟶ **image similarity**


25
88
163
136
122
5
55
105

Time Point Distances

- Rank distance
- Curvilinear distance
- Spatial distance



http://www.aviz.fr/~bbach/timecurves/Bach2015timecurves.pdf

Characteristics

Degree of stagnation
progressing

stagnating

Degree of oscillation
no oscillation

large
oscillations

Self-intersection
no intersection

many
intersections

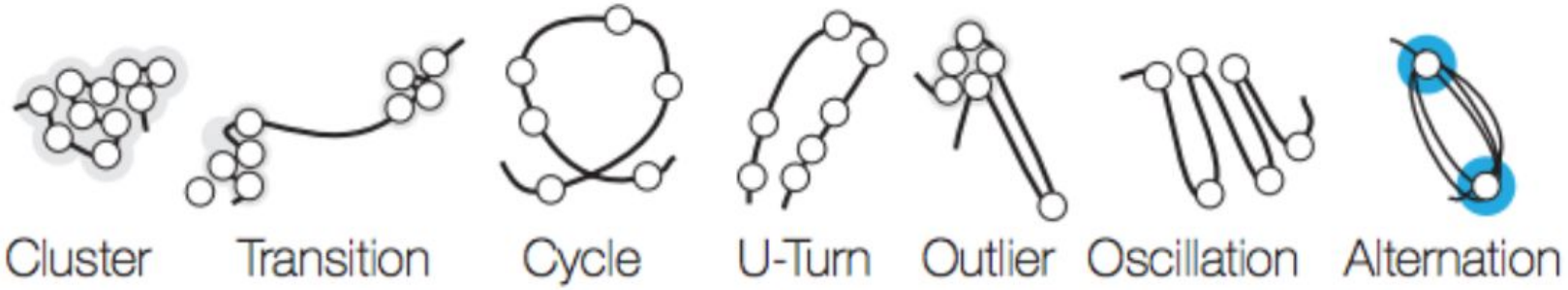
Point density
sparse

dense

Irregularity
regular

irregular

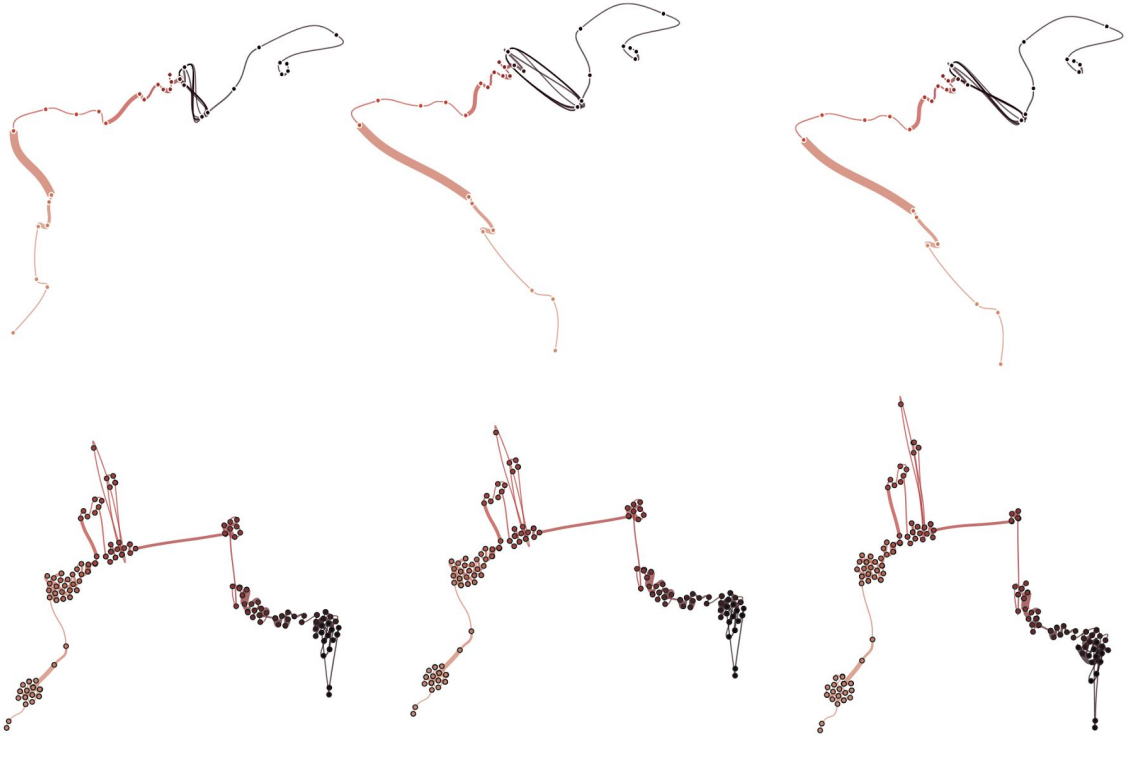
Patterns

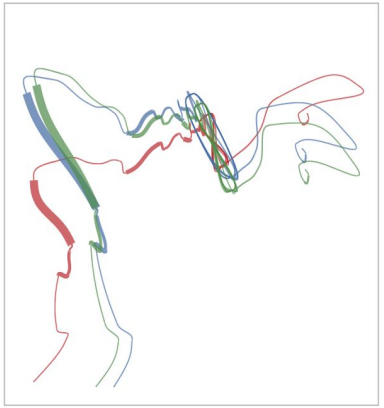

Cluster
Transition
Cycle
U-Turn
Outlier
Oscillation
Alternation

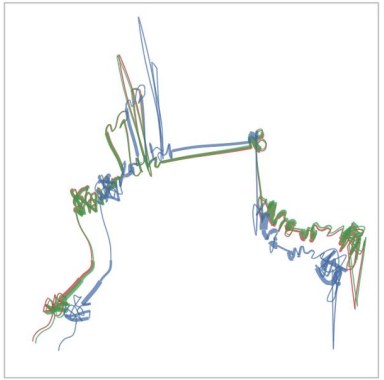
Limitations + Challenges

- Information not conveyed
- Tuning distance metrics
- Scalability

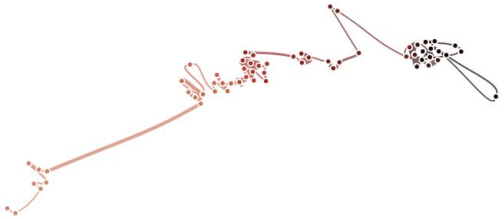
Reproducibility



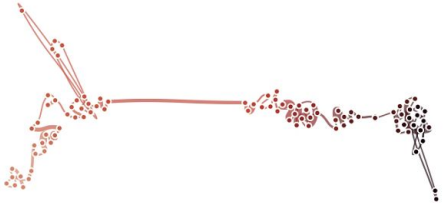




Stability



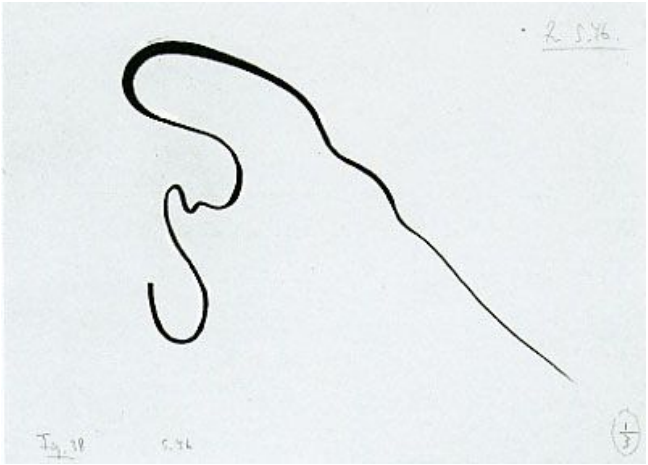
last 100 time points



last 150 time points

last 200 time points

The End



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