STUDY 7/0

ERROR-GENERATED SPATIOTEMPORAL ANIMATION

Dr Dejan Grba, Vis Assoc Prof

School of Art, Design and Media, Nanyang Technological University, Singapore

Philippe Kocher, Prof

Institute for Computer Music and Sound Technology

Zürich University of the Arts

CONCEPT

EXPLORE the positioning errors of a static GPS receiver in a series of media transcoding procedures.

MOTIVATED by the idea of cognitive mapping:
a configuration of individual, non-linear and discontinuous spatiotemporal experiences, and their outcomes.

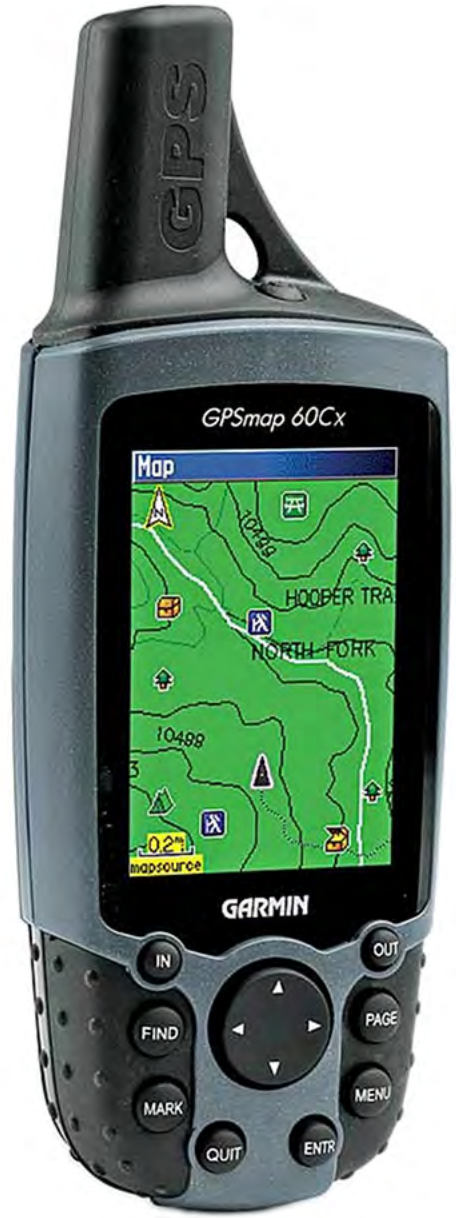
FOCUS on error and unreliability as the logical counterparts
but also as the criteria (measures) of the utility of the GPS
or any other technical system.

WE USE technical flaws as a conceptual source material
for further generative processing and expression.

THE INITIAL PROCEDURE

WE SECURED a Garmin GPSmap 60Cx GPS receiver to a desk, selected the Track Log function,
and let it run for 7 days, 7 hours, 16 minutes and 11 seconds.

TRACK LOG starts when the receiver gets a sat fix.
It saves the time, location, elevation, distance and speed data about the waypoints which are automatically created according to “time”, “distance” or “frequency” sampling.


GPS
GPSmap 60Cx
Map
10499
HOOPER TRA
NORTH FORK
10488
.02mi
mapsource
GARMIN
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MARK
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IDEALLY

FOR AN IMMOVABLE GPS RECEIVER,

Track Log should be a series of overlapping waypoints

with the identical location and elevation,

zero distance and speed plus a number of timestamps

if the sampling method was “time” or “frequency”,

OR it should be a single waypoint (location and elevation),

with zero distance and speed

plus a single timestamp

if the sampling method was “distance”.

OUR SETUP

RECORDED a Track Log of 8438 positions

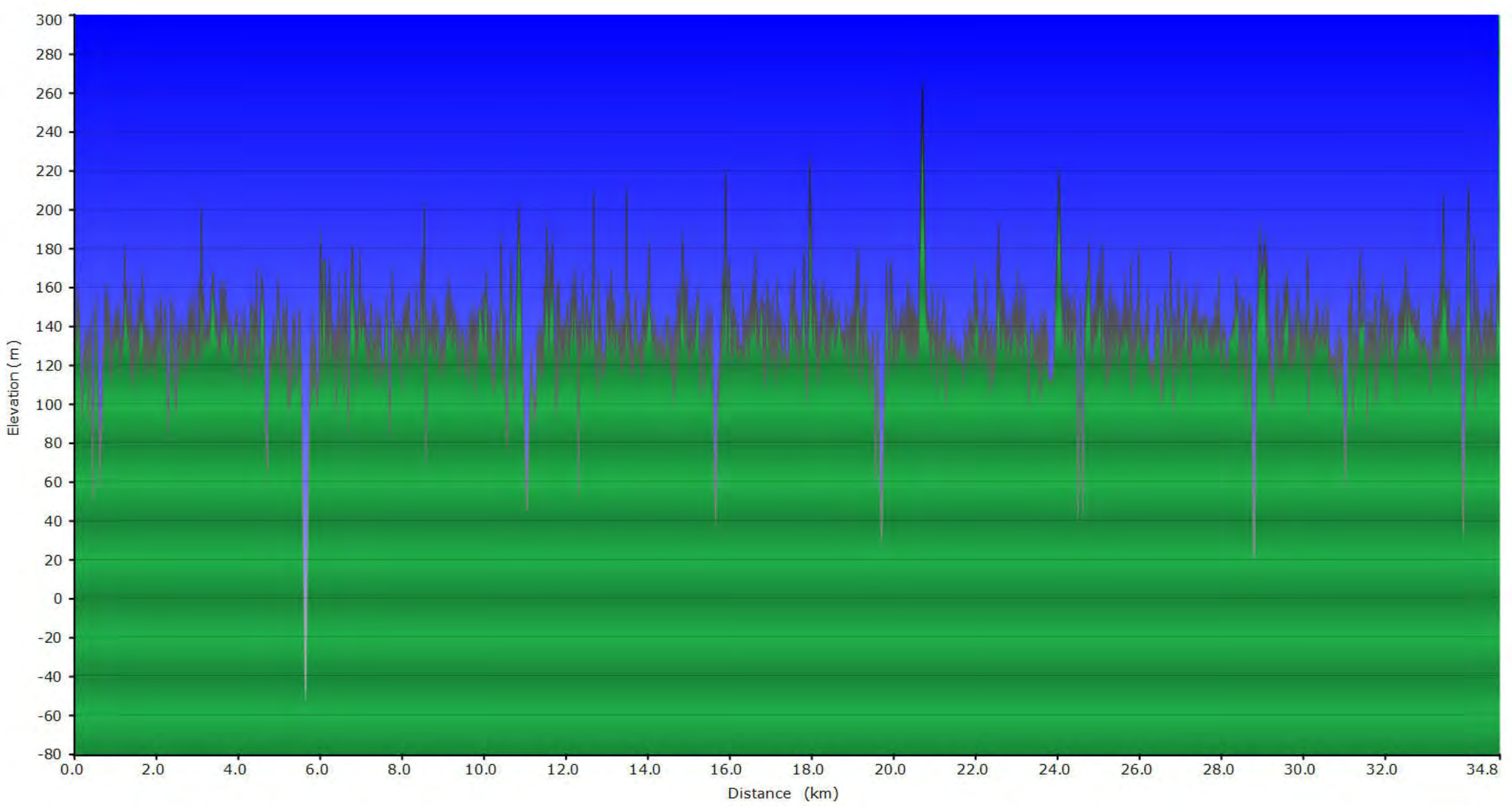
on a 34.7km long path

covering an area of 2.1km^2,

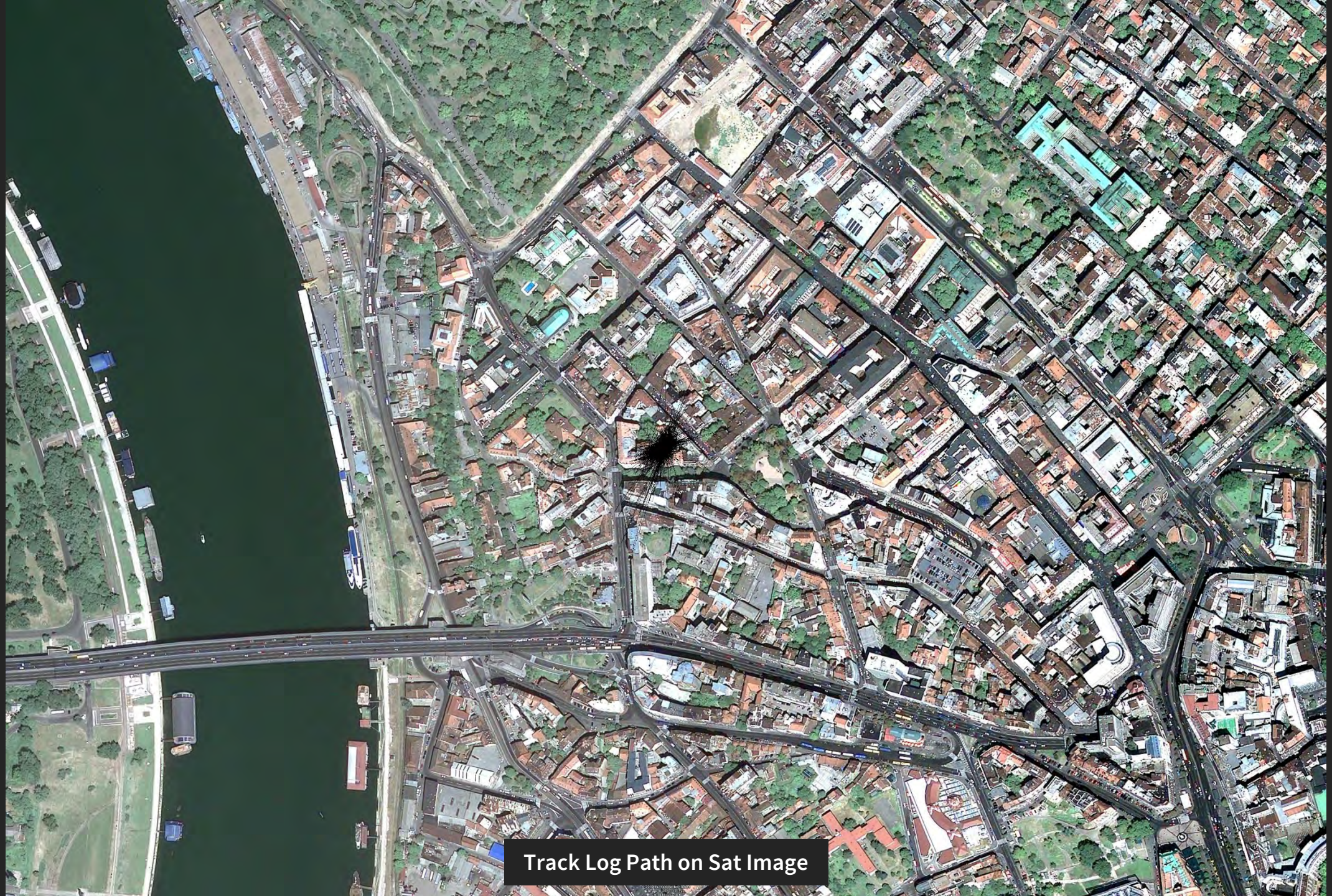
with average speed of 0.2km/h and

a maximum speed of 17.9km/h.

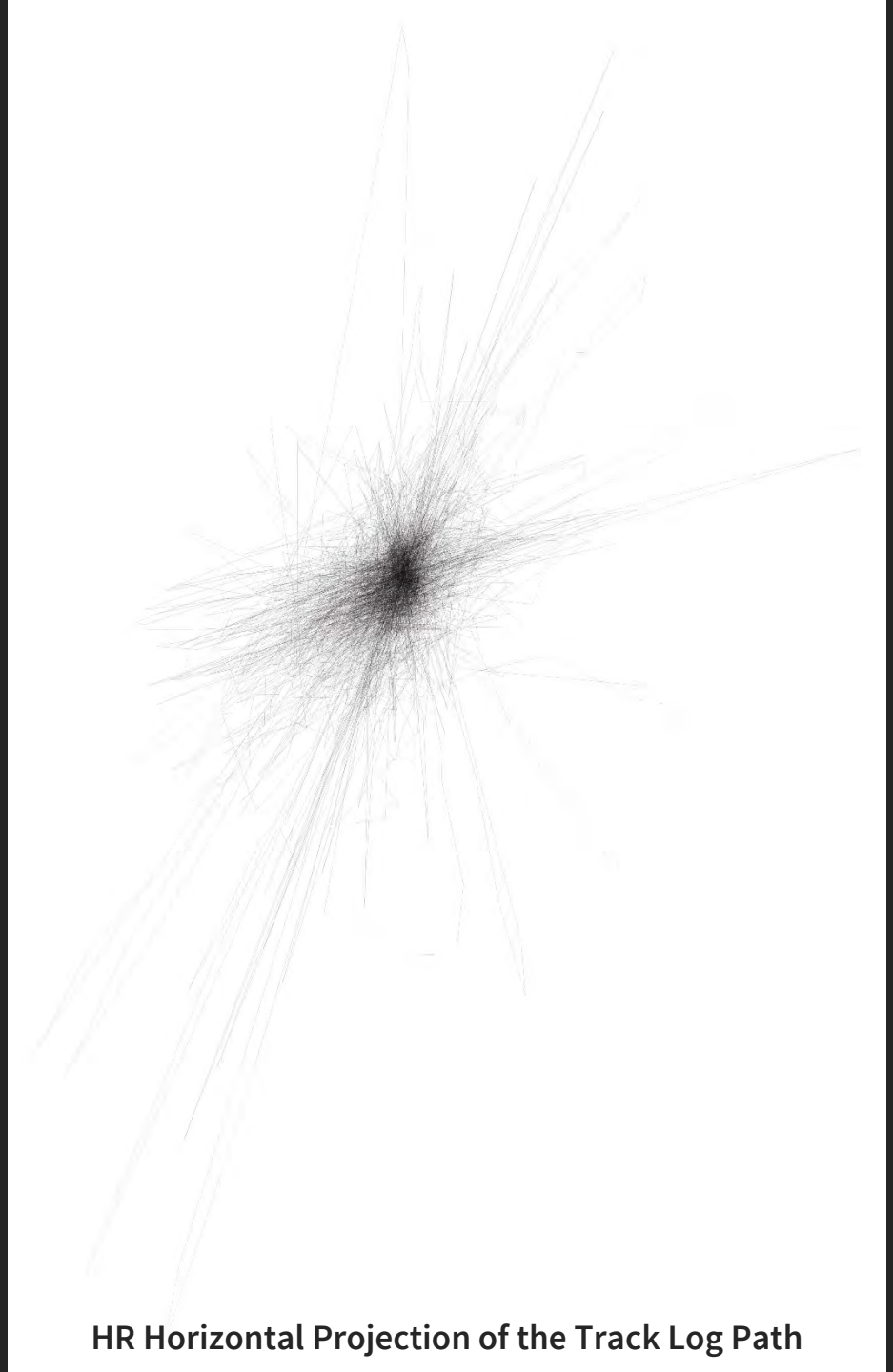
Track Log Path in MapSource



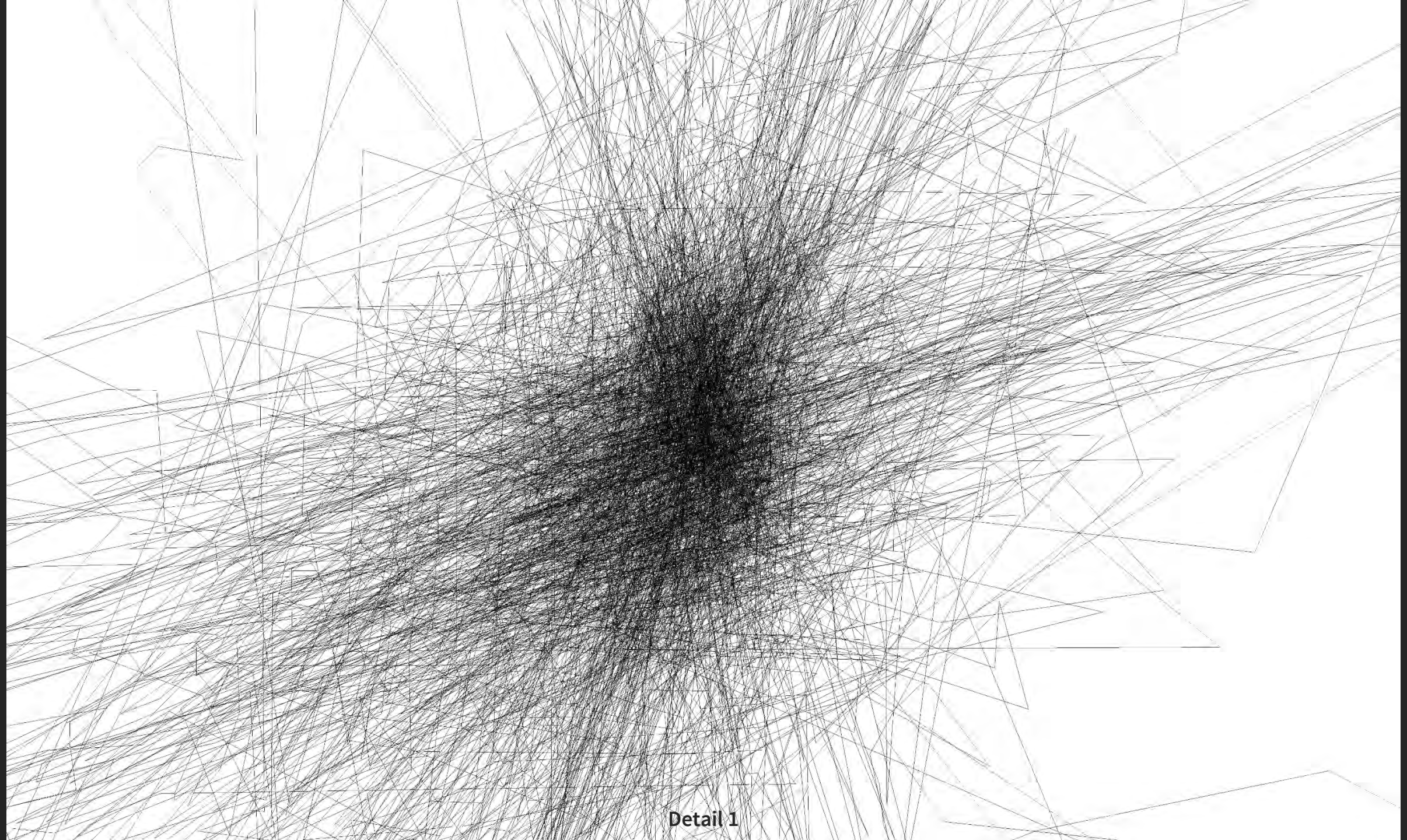
Track Log Elevation Data in MapSource



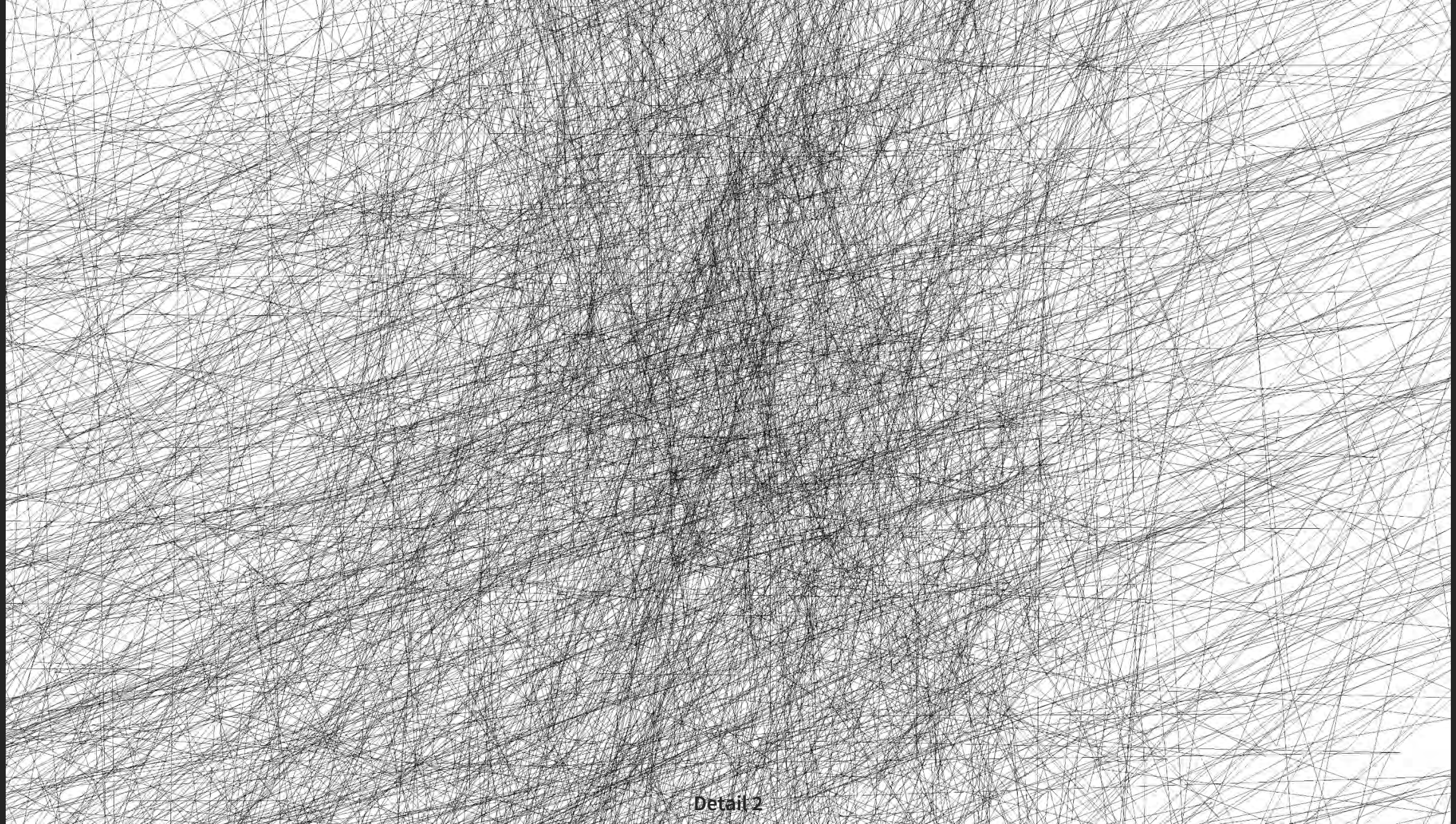
Track Log Path on Sat Image



HR Horizontal Projection of the Track Log Path



Detail 1



Detail 2

THIS IS A CONSEQUENCE OF

the limited precision of a GPS receiver

operating inside a building

under slightly changing weather,

combined with the inaccuracy of GPS infrastructure.

2D ANIMATION

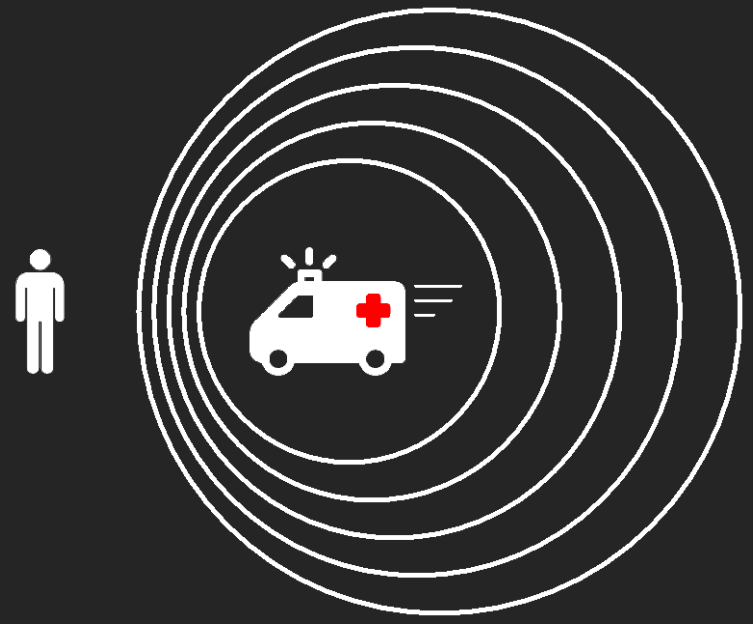
WE GENERATED the animation with Track Log data,
using the longitude and latitude timestamps
to move a red dot along the
horizontal projection of the Track Log path.

630,971 sec of the real-time record
compressed to
4 min, 41 sec (281.233 seconds at 30fps).

SONIFICATION

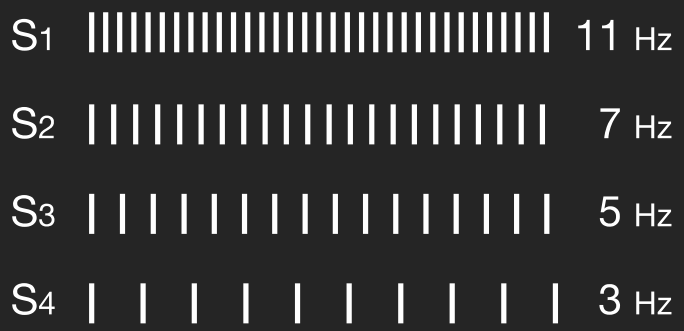
BASED on the modelling of distance-related acoustic effects.

1) Doppler

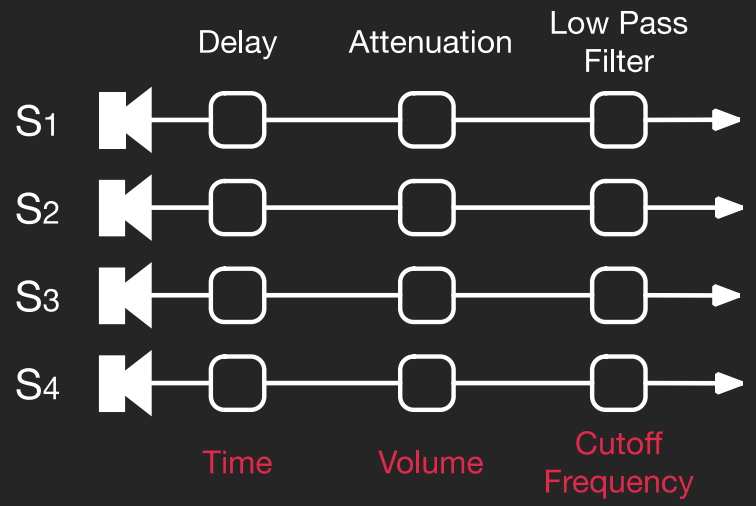


2) Damping

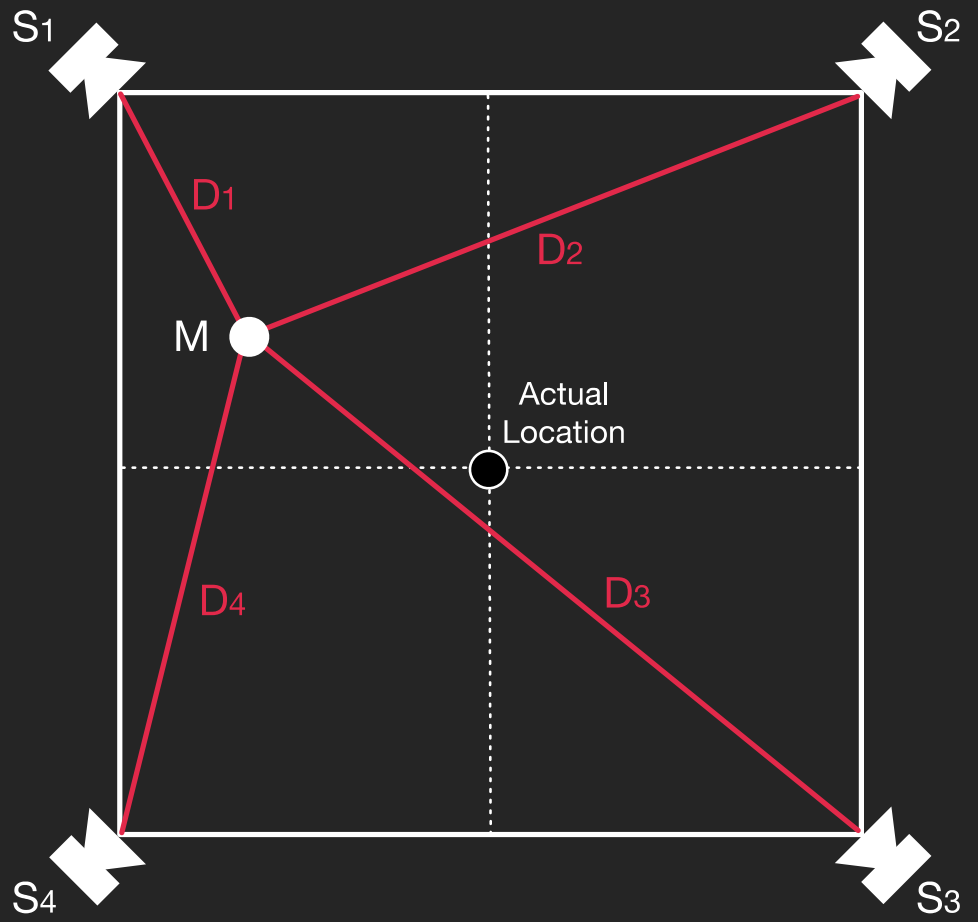
Sound Sources



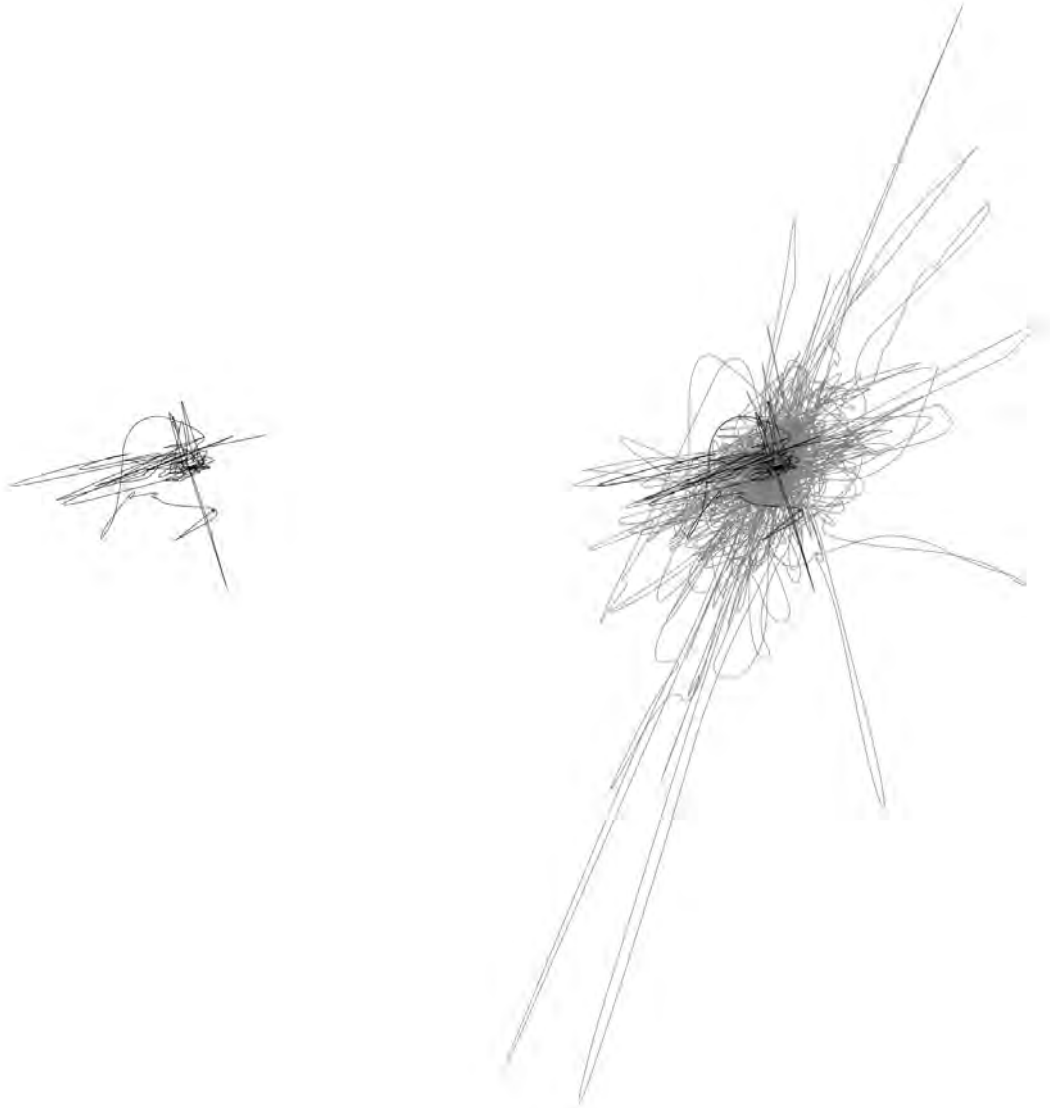
Signal Flow



Distance to a Virtual Microphone



DATE 10 JULY 2010 TIME 01:23:17PM DURATION 02:21:10:38.274 PATH 12921 TO 13699 OF 34707m



NORTH 44°49'010 EAST 20°27'224 ALTITUDE 127m DISTANCE 03m HOP 00:00:16 SPEED 00.70km/h HEADING 073°

INTERACTIVE VR ANIMATION

WE ARE USING the 3D spatial data (lon, lat, alt)
to render a Track Log tunnel, and the timestamps to animate.

AN EXPLORATORY interactive VR interface
initially puts the viewer in the subjective position
of the erroneous GPS waypoint,
and allows them to navigate the experience
by changing the viewing angle, position and lighting.

THANK YOU!